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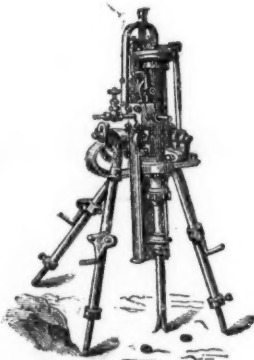
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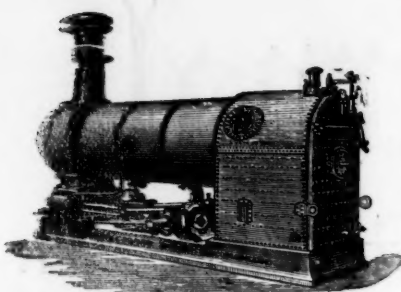
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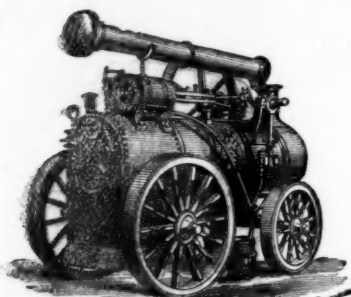
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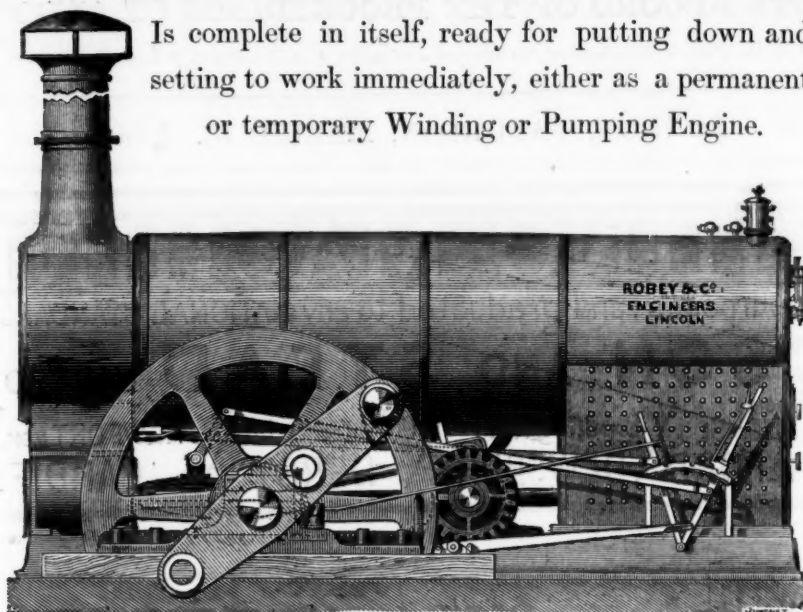
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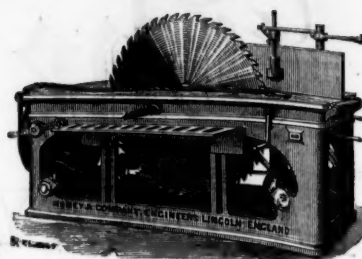


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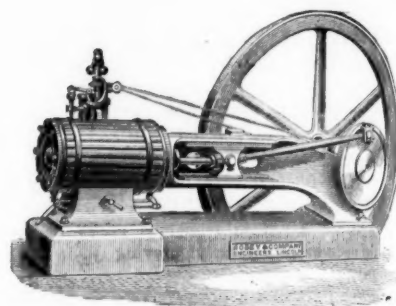
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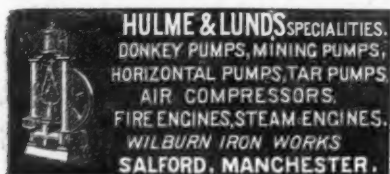
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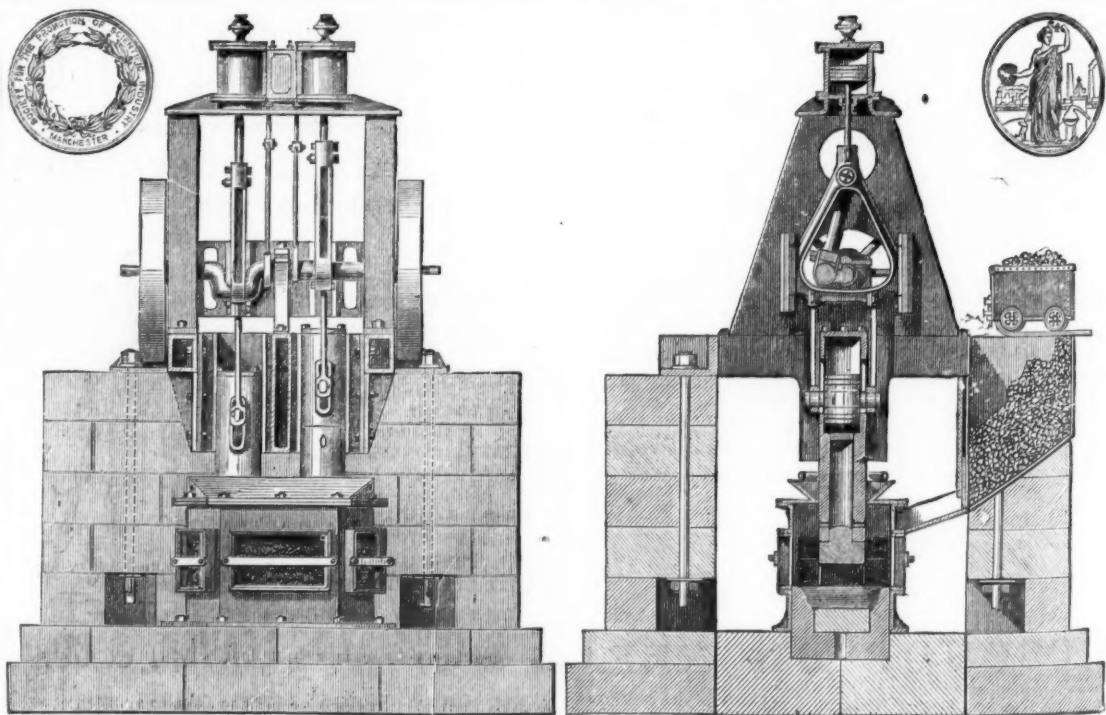


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## Original Correspondence.

## MINING IN IRELAND—No. IX.

## CONVERSATION BETWEEN A FATHER AND SON.

FATHER.—I believe our last conversation concluded while I was in the act of giving you Dr. Kane's description of the Cosheen Copper Mines in West Cork, and as many discoveries have been made in this district since the date of his remarks, we will proceed westward to Crookhaven and its vicinity on the same zone or belt of country as the Cosheen Mines, and see what has been doing there.

SON.—Have the Cosheen Mines changed hands since Dr. Kane wrote of their favourable progress?

FATHER.—They have been worked by two or three parties since that time. They are now better known as the Schull Bay Mines, and I think a company was recently formed in Liverpool for giving them a further trial. The mines have yielded a good deal of ore, but I am not aware that any profits were made. It does not follow, however, that they are exhausted, and may yet be profitably worked. The Crookhaven Copper Mine is situated on a headland on the south shore of Crookhaven Harbour, and the surface indications are favourable, yet the workings, which are perhaps 70 fms. deep, have yielded but little ore, and I am of opinion the principal lodes have been never reached in the deeper works, as it is more than probable that the dip of the lodes as seen at surface has changed in deeper ground, and now remain intact beneath the sea, where the mine workings have not reached; the contorted nature of the strata at surface and flexures of the lodes are not unfavourable to such a conclusion.

SON.—What is the formation of the Crookhaven district?

FATHER.—Clay-slate, the killas of the miner; and the gangue of the lodes is a beautiful ferruginous quartz, with sometimes chlorite near the surface. We will now push onward to the Browhead Copper Mine, on the same run of lodes as Crookhaven Mine, but located two miles further to the west on an elevated promontory. This mine was worked for some time in a primitive fashion, and though possessing three or four veins likely to produce mineral in quantity, only one has been tested. The outcrop of this lode in the cliff which overlooks the Atlantic Ocean is very beautiful, as green carbonate of copper and azurite are seen to tinge the gangue and containing strata from the summit to the base, where the serging waters at the foot of the cliffs impart an appearance of great freshness and beauty to the carbonates of copper as they descend downwards till they are lost to view beneath the bed of the sea. A level was driven on this vein and a sump sunk beneath the level of the sea about 25 fms., and the ore extracted (being purple copper ore of high produce) realised 9000*l.*, and it is said covered all expense of the workings. This I believe is a real good mine, but has been badly handled. In the first place by the mode of working, and in the second by the avarice of the lords' agents, who are so unreasonable as to preclude enterprise of any kind from touching it. At one time two Cornish foremen miners worked the lode on tribute, and were making good profits after clearing royalty and other charges, but a fine of 2000*l.* being demanded of them in addition to royalty, they were unable to go on. Subsequent applications were made for a grant of these mines to my certain knowledge, and as the terms are always most extravagant a good mining property remains the haunts of the cormorant eagle and other wild birds that inhabit the coast.

SON.—Your account of the Browhead Mine is very interesting, father, but its surroundings are unfortunate.

FATHER.—I have no patience with those mineowners who act the part of the "dog in the manger," while their poor tenantry, who may be well fed and profitably employed, are now almost famished by hunger. There are two places north of the Browhead where veins of copper ore are seen to make an outcrop in the cliffs, named respectively Mizen Head and the Three Castle Head, both of which have attracted some attention, especially the former, which produced close to the surface a quantity of yellow copper ore.

SON.—Will you describe to me the exact nature of the copper ores obtainable in the West Cork Mines, for when you say purple copper, yellow copper, green carbonate of copper, azurite, &c., I cannot exactly understand their composition and metallic contents.

FATHER.—I will presently enlighten you on that subject, but follow me yet awhile over this interesting mineral field, and we will next touch at Spanish Cove, three miles north-east of Crookhaven Mines, where a powerful quartz lode, highly charged with yellow copper ore, meets the gaze of any practical eye that may pass along the military route to these remote regions.

SON.—Would that lode pay to work, father?

FATHER.—Not at the surface, but I consider it a good speculation, as it will very likely improve in depth. Following up the Royal Route towards Skull, at a place called Ballynazzard, copper schists in great profusion are observable on the lands of a local magistrate, but there has been no mining operations carried on to prove their continuation or otherwise to any depth beneath the surface. At a place called Dhurode, on the south shore of Dunmanus Bay, a mine was worked some years ago for copper ore. Some of the lodes are observable cropping out at surface and in the cliffs that fringe the Bay. Several east and west lodes have been tried to a depth of 20 or 30 fms. without yielding ore in paying quantities. One lode, however, called the great caunter, has a bearing about north-west and south-east, and intersects the whole group of lodes in the vicinity; this lode has yielded a large quantity of yellow copper ore, and from reports I have seen the deeper levels are the best portion of the mine. The company, however, who were engaged in working these mines had not a sufficient amount of capital to procure machinery to follow the ore in depth, consequently a rich mine awaits the advent of capital and enterprise to make this another Berehaven in point of importance as a good mineral property.

SON.—How do you attach such importance to this mine when you say only one lode has produced ore in paying quantities?

FATHER.—The masterly character of the lode, and the fact of its carrying a powerful elvan range on its footwall, besides the east and west lodes to the number of nine or ten, all are intersected by it at acute angles, so that in reality this lode is the receptacle of all the mineral treasure worthy of notice in the property named. On the shores of Bantry Bay, approached *via* the Holyground, three or four miles were opened on some quartz and copper ore veins at places known as Gloun Aulen, Killeen, and Gurtwallog; copper ore was obtained at all three places, and the indications were in some instances considered good, but no increase of mineral was proved in sinking shallow pits and driving on the veins.

SON.—How many lodes are there at Berehaven Copper Mines?

FATHER.—There are several, but only two have proved of value. One an east and west lode, called the Mountain Mine, and the other named the Cominche vein, runs north-east and dips south-east; the yield of these lodes, which are in places 40 ft. wide, was formerly from 6000 to 7000 tons per annum. The formation is clay-slate, and the gangue of the lodes a hard white wild quartz, and as the mines yield only yellow copper ore the percentage of metal does not range high. East of Skibbereen, near the picturesque harbour and village of Glandore, are the Glandore Copper, Iron, and Manganese Mines. Near the surface the deposits of manganese were wrought upon with good profits for 25 years; deeper down brown hematite iron became the prevailing mineral, and finally of late copper ore has put in an appearance, and will in all probability turn up in quantity as the mines are developed to greater depths beneath the surface, the channel of ground constituting the productive portion of these mines is seen cropping out at surface for a distance of over three miles, and at one expansion is over 15 fms. wide. The formation of the country is clay-slate, and contains several contemporaneous veins of quartz and copper ore, some of which are intersected at acute angles by the main lode just described, the junctions being invariably points of no ordinary importance. The bearing of the main lode is about north-west and south-east, the dip almost vertical, and the minor veins have an east and west course.

SON.—Those big masterly lodes, with such favourable indications, are no doubt the proper ones to be attended to.

FATHER.—Irish mining would have a different history had doubtful speculations been disregarded, and only the genuine lodes, pronounced as such by competent and above all reliable authorities. The

ores obtainable in the West Cork copper mines are the following varieties:—Yellow copper ore, copper pyrites ( $\text{Cu}_2\text{SFeS}_2$ ), containing in 100 parts—copper, 34.61 per cent.; sulphur, 34.88; iron, 30.51. The mines producing this ore are Berehaven, Gurtwallog, Killeen, Gloun Aulen, Dhurode, Crookhaven, Mizen Head, and the deeper workings of the Ballydehob Mines. Erbusite, variegated copper ore ( $3\text{Cu}_2\text{S}^3\text{FeS}^3$ ), containing—copper, 51.71 per cent.; iron, 6.18; sulphur, 21.28. The localities of this ore are Browhead, Skull Bay, the Ballydehob Mines, also Dhurode Mines, and a few others; small quantities. Copper glance, Redruthite ( $\text{Cu}_2\text{S}$ ); locality, Glandore Mine, and Kinnare in Kerry. Cuprite, ruby copper ( $\text{Cu}_2\text{O}$ ), containing in 100 parts—copper, 88.8 per cent.; oxygen, 11.2. A deposit of this ore of great richness and beauty was discovered a few years ago by an engineer who was engaged in explorations at the Glandore Mines. Tetrahedrite, grey copper ore ( $4\text{Cu}_2\text{S Sb}^2\text{S}^3$ ), usually contains—copper, 38.6 per cent.; sulphur, 26.3; antimony, 16.5; also silver, &c. This ore has been found at the Browhead Copper Mines, Skull Bay, and in small quantities at other mines. Carbonate of copper, malachite ( $\text{Cu Co}^2 + \text{CuO} + \text{H}^2\text{O}$ ), containing in 100 parts—copper, 51.40 per cent.; oxygen, 32.31; carbonic acid, 14.68; water, 1.6. This mineral has been found at all the mines in the district, but the largest quantities were obtained at the Skull Bay Copper Mines. Azurite, blue carbonate of copper, similar in composition to the green carbonate, but more rare and of greater beauty, occur associated with ruby copper at the Glandore Mines.

SON.—The analysis of the ores you have named as obtainable in the West Cork mining district I have carefully noted, and will be glad to know what is the percentage of copper contained usually in the ores sent to market, as I expect the analyses given are of pure samples unaccompanied by stone or gangue of any kind.

FATHER.—The yellow copper ore is usually dressed to 8, 10, and 12 per cent., while the richer varieties are often dressed to 20, 25, and even 30 per cent. metallic copper; the analyses I have given you are of pure samples.

SON.—How many of these mines are now worked, father?

FATHER.—I am not aware that any are now going except Berehaven, Glandore, and perhaps Skull Bay Mines.

SON.—I remember what a desolation the abandoned mines in the Gwennap district, in Cornwall, looked when we last visited the place on your statistical tour among the mines, and I cannot help thinking that wherever there are "old bays," as they call them there, the outlook must be very dreary, especially among the working population.

FATHER.—The solitude now prevailing, where once was busy scenes of industry, is too depressing to dwell upon, so we will adjourn our conversation for a week.—*New Cross, London, March 2.*

## THE COLOURING OF THE GEOLOGICAL SURVEY MAP OF THE SOUTH-WEST OF IRELAND.

SIR.—When I first glanced at the letter of the Director of the Geological Survey of Ireland, in the Journal of Feb. 21, I thought that justice at last was about to be done to our mining districts, and the true colouring of the maps about to be given, but it seems all we are to get will be the "separation of the Glengarriffe and Dingle beds" from the Old Red Sandstone and Carboniferous formations. Where are the sandstones? The good this will do is entirely beyond my comprehension. Somewhere about the year 1841-2 Capt. Ev—n—n, R.N., then Inspector of Coast Guards of the district, called on me and introduced a gentleman connected with the Ordnance Survey as Col. S—. I pointed out the character of the rock at surface, and what was being brought out of this mine, and as the Colonel remarked that geological maps (coloured) would soon be published, I asked how the district would be described. "Old Red Sandstone," of course, said the Colonel. I explained to him that such false colouring would do incalculable injury to the country, and that the true rock formation of the district was clay-slate, in proof of which I said, "Look at all the heaps of stuff about the mine, and I will defy you to find a piece of sandstone. The Colonel promised that the error should be corrected. Just as they were about to leave Capt. Ev—n—n called me aside and said, "Col. S— is not the name of the Colonel." "Then what is his name," I asked. "I'm d—d if I know," said the Captain, and stepping into his boat they sailed across the harbour to Schull. I was informed afterwards that the gentleman who honoured me with his company was Col. James, R.E. About 20 years ago the late Mr. Lisabe attacked the late Mr. Jukes on the false colouring of the map, &c. Mr. Jukes, in a letter of Sept. 13, 1860, to Mr. Lisabe, says—"Moreover, in the opinion of many geologists, most of the Cornish mines are also in the Old Red Sandstone. You may call many of the slates killas if you like, for they are like those of Cornwall and Devon; but there are no porphyries, no elvans, no granite in all Cork." Some time ago the late Capt. Charles Thomas, of Dolcoath Mine, inspected and reported favourably on the mine. He describes a large elvan formation intersecting the lodes. I remember when two pieces of elvan rock—one Irish, the other Cornish—were sent to an institution in Dublin, but the authorities were unable to decide which rock was Cornish or which was Irish. I could say a word or two about "Comb-boola grits," but dare not trespass further on your valuable space.

*Cosheen Mine, Schull, County Cork, March 8.* WM. THOMAS.

## MINING IN IRELAND—THE SILVERLODE LEAD MINING COMPANY (LIMITED).

SIR.—I note with pleasure the formation of the above company, which I do not doubt is in great measure due to the attention that has been called to Irish mining by your valuable series of articles on the subject. There are many mineral deposits of great value in the Sister Isle remaining unwrought simply and solely from the fact of their nationality, and which would return splendid dividends to those who worked them. The present company's property is in one of the best districts, close to the Silvermine Mountain, and is undoubtedly a most valuable ore. I believe it will be found that besides the silver-lead, on which the estimate of profits is based, there are most valuable deposits of calamine in the sett, which will add greatly to the returns. I hope the success in store for this undertaking will lead to the further development of the natural resources of this country, and thus assist in the most practical manner to the relief of her distress. — A WELL-WISHER.

## ON INVESTMENTS IN BERMUDA.

SIR.—In these days of "travelling made easy," and when people seek sound investments for money in remote parts of the globe, let me direct attention to investments on land and houses in our oldest British colony—Bermuda. It seems remarkable that no capitalists have established a bank in Bermuda. Such an institution would probably realise a handsome fortune to its founders. I once (on this subject) spoke to a gentleman now there, Mr. James A. Atwood, one of the Representative Members of the House of Assembly for the town of Saint George's, Bermuda, and ascertained that the formation of a bank would not only be feasible, but its profits probably considerable. In Bermuda, 2 regiments, 4 companies of Royal Engineers, a proportion of the Royal Artillery, Commissariat, and Army Medical department are stationed; Bermuda also contains a large dockyard, and is a rendezvous for the North American squadron. The annual imperial expenditure there probably exceeds 150,000*l.* Large sums of money in specie are constantly needed for the payment of troops, purchase of stores, and wages of workmen and salaries of officials.

As there is no bank, money has to be procured by the tedious process of issuing bills of exchange on the British Treasury, and bringing specie from Halifax or elsewhere. Were a bank established, the Bermuda House of Assembly would doubtless authorise the issue of notes, and the bank secure large profits by providing the necessary cash for Imperial Government purposes, and thus simplifying the detail payments. I know that the Bank of Montreal made for many years large profits when Canada was an Imperial station—most Government payments being conducted by its agency. A large sum of Government money, technically termed "the rest," usually remains in the coffers of a bank doing Government business abroad. I remember hearing that this "rest" in the Bank of Montreal never fell below 10,000*l.*, but did not exceed 80,000*l.*

Bermuda merchant enterprise is terribly crippled for want of a bank where merchants and shipowners could readily obtain loans,

which they cannot now do locally, without much trouble and expense. Ships often enter Bermuda in distress, are repaired on the marine slip at St. George's, Bermuda, and need funds for repairs. I remember one vessel needing 2000*l.* She at length obtained it on a "bottomry bond" security, but paid for the loan at the rate of 12*l.* per cent. per month. Let some of your readers think over this letter.

AN OFFICER WHO HAS SERVED IN CANADA AND BERMUDA.

## MEXICAN THREE PER CENT. LOAN OF 1851.

SIR.—Some weeks ago you were good enough to insert a letter of mine respecting the bad faith kept by the Mexican Government with bondholders of the old loan of 1851—Three per cent. Consolidated Stock. Apparently there is a prospect of the bondholders being allotted a fair sum in compensation for their bonds and the 18 overdue coupons attached to them. The gentleman who came from Mexico to endeavour to make satisfactory arrangements appears to have been hitherto successful, and has returned to Mexico to complete the business. Perhaps through your columns a fair compromise might be suggested. The 100*l.* bonds with 18 overdue coupons, each worth 17 *l.* 10*s.*, can now be purchased for about 13*l.* 10*s.*—a very low figure apparently. Surely bondholders ought not to receive less than 60*l.* per 100*l.* bond.

LOOKER-ON.

## A NOVEL AND VALUABLE ASSAY.

SIR.—On reading the Scientific American I was much surprised to find the following statement, which I beg you will publish in the Journal:—"It is said in Arizona that a miner doubting the capabilities of a certain assayer got an old potato, dried it thoroughly, pounded it up fine, and then submitted the powder for assay, and the results of the assay gave a yield of \$40 to the ton." This amused me very much, and perhaps it may some of your readers.

*Wolverhampton, March 9.*

J. BEACH.

## THE CANADIAN SULPHUR AND COPPER COMPANY.

## ITS HISTORY AND A WARNING.

SIR.—Launched in 1872 with brilliant prospects of success shares went to 2*l.* premium by the assistance of one of the promoters whose career has been as glorious as the rising and setting sun; worked at a loss under the management of the Scottish board of directors up till June 1878, and recommended by them that the company should be put into liquidation; rescued from liquidation by philanthropic English shareholders, who purchased large numbers of shares at from about 5*s.* and upwards; new lodes are now found, and the mine again flourishes on the Stock Exchange. In June, 1879, the shares were quoted as low as 2*s.* 6*d.*, representing a capital value of 10,312*l.*; to-day, at 60*s.* a share, 247,500*l.* is the capital value. The richest mine in Cornwall, the Devon Great Consols, has at the present price of 15*l.* a market value of only 150,000*l.*; and the Panullicio Mine, said to be earning upwards of 30,000*l.* a year, has at 5*l.* a share a value of 250,000*l.* Truly we live in an age of financial wonders, but if the intrinsic value of the Canadian Copper Company's shares almost entirely consists of the price the philanthropic Englishmen and others expect to receive from a too confiding public, would it not be wise to consider the past history and present position of the company? The real merits of the mine must soon be known, as the cash assets of the company are under 5000*l.*, and without further philanthropic aid no funds for working the mine are available. I am neither "bull" nor "bear," my only desire is that intending purchasers may think twice before they act.—*March 4.*

J. M. F.

## NEWFOUNDLAND LAND COMPANY

SIR.—Having just seen the note on this company in last week's Journal, I should wish to say that though a holder of 500 shares I never received the report in which the directors proposed to wind-up the company and sell the land, although I wrote to the office more than once asking for some information. More than this, it was only when in London last November that I heard of the proposal made by the directors in June (which I should have most strongly opposed had I known of it). On that occasion we were saved by the interposition of Mr. Wm. Abbott, who objected to the sale of the property, and elicited the very important fact that our Chairman, Mr. Cyrus Field (who knows something), wanted to buy it, and had offered 20,000*l.* for the land on his own account. Shareholders ought to feel very grateful to Mr. Abbott, who has taken a great interest in this company, and if the directors had adopted a suggestion he made some years ago about working a mine out there, the shares would probably have been worth 10*l.* a share, and I hope to see him propose something else before long.

Since Mr. Cyrus Field offered 20,000*l.* for the property several circumstances have occurred which ought to increase its value largely. I believe that the lease of a mine on which the mining company have spent 30,000*l.* has fallen into the Land Company, and at the present price of metals it ought to be a valuable one if the statements of your correspondent "Inquirer" about it are correct. There was a rumour lately of important mineral discoveries having just been made, and I believe there is no doubt that the long promised railway which has been surveyed to run through the company's land is now under the consideration of the Canadian Government. The number of shares is only 43,226, and the company owes nothing, having just paid off its preference shareholders. If, then, the property some years ago was worth 20,000*l.* to Mr. Cyrus Field, what should it be worth now even if sold in lots, taking into consideration the favourable circumstances I have referred to? Surely more than 1*l.* per share.

SHAREHOLDER.

## THE FLAGSTAFF COMPANY

SIR.—The shares in the Flagstaff Company are now at 3*l.* per share, representing a nominal value of 90,000*l.*—to this add the debenture debt, reduced to (say) 20,000*l.*, and the price to be paid for the mine (say), 40,000*l.*, and the working capital needed, 20,000*l.*, gives a sum invested of 170,000*l.* for a mine which Yankee owners only value at 40,000*l.* To pay even small interest upon this sum will require a large sum to be made, and it must be well known that the mine will not be in a position to pay dividends for a long time to come, even should they be fortunate enough to make new discoveries. Legitimate mining enterprise is greatly injured by these market transactions, whereby the public buy shares on delusive reports as to value, whilst the operators are not concerned whether a mine even exists—in fact, so long as dealing in the shares can be actively manipulated.

*London, March 10.*

EYE-OPENER.

## FLAGSTAFF SILVER MINING COMPANY.

SIR.—Several more have joined the syndicate, and they are now concluding their arrangements, by which it is believed that shareholders will get at least 10*l.* per share in the shares of the new company for their shares; the shares are to-day quoted at only 3*l.*, and it is announced that members of the syndicate are buying largely at this price—my advice to shareholders is to increase their holdings. The Chairman, Prof. Vincent, an energetic American gentleman, is working might and main to complete the resuscitation of the company, and is confident of succeeding in a few days.

*March 2.*

ONE WHO KNOWS.

## FLAGSTAFF SILVER MINING COMPANY.

SIR.—The hearing of the case of Pearson v. Vincent, a libel case, has again been postponed, the defendant's solicitor and counsel not being to the fore when the case was called on for trial. These gentlemen were both on the Flagstaff Company's board of direction at one time, and the defendant is still an active member in the affairs of the company. The case is to come on for hearing on the 12th inst., and the Scottish syndicate for the resurrection of Flagstaff glories should appoint a special commissioner to attend this trial and report to them the "memories of the past," as recollected and testified by the respective witnesses. It is to be hoped that our Northern friends' faith in the Professor's manipulation will not be shaken, or that they may have cause to regret having changed places with London dull wits in the possession of the shares of this company. But, speaking more seriously, would it not be better for this syndicate to openly avow their intentions and let the shareholders know whether they



are likely to purchase the mines; at what price and what they are going to give the shareholders? Very many persons have been induced to buy these shares on the faith of the "Northern Syndicate" paying for the mines and giving them to the company, and it is to be hoped that they will not be deluded, but if this is to be the case the sooner they know it the better. The silence of the directors is very reprehensible.

A HOPEFUL HOLDER.

#### FLAGSTAFF MINING COMPANY.

SIR.—I observed in last week's Journal a letter from Mr. Pearson, a former director, stating that he was the only person authorised to treat for the sale of these mines. If this is so, how comes it that Prof. Vincent can induce Scotchmen to subscribe for purchasing the mines, and buying up the shares in the company? If a purchase was intended surely they would require to see that Mr. Vincent has an authority to deal at a fair price.

CAUTIOUS INVESTOR.

Angel-court, March 11.

#### IRON ORE FROM SWEDISH LAPLAND.

SIR.—The important work, published in 1877 at Stockholm—*Sveriges Geologiska Undersökning*—shows the immense and indisputable superiority of Swedish Lapland iron ore over Spanish for the manufacture of highest class steel. The sole cause of the Lapland ore not having hitherto contributed to the English, German, Belgian, and French supply is well known to be ascribed to want of economic transport, which problem I am prepared to demonstrate is now beyond the region of controversy. One of the several routes that can be utilized is for a distance of 90 English miles to the River Lulea, whence loaded steamers of light draught, identical in this regard with several steamers that have made the long voyage from this country to India during the awfully stormy weather in the Bay of Biscay, &c., in December, January, and February last, the Hetty, Nearchus, Sinda, and Belochi, will proceed to England, &c., via the Gota Canal or Elsinore. Iron ore can be delivered the entire distance from the mines to England at under 10s. a ton, and deals under 30s. a St. Petersburg standard hundred, the cost of the plant being calculated with an excess upon current prices, &c., a short period redemption fund, fire and marine insurance, repairs, management, interest, dividend 10 per cent., wages, fuel, engine stores, canal and port charges, and contingencies, with a minimum number of voyages, an exuberance of time allowed for overhaul and repairs, all which will stand the most rigorous scrutiny of practical experts. I hold the most elaborate calculations and minutest development at the disposal of capitalists, and solicit their co-operation in an undertaking of the greatest importance, presenting the most lucrative return on capital invested, with the assured material support of the Swedish Government, whether in combination with the New Gellivare Company (Limited) or drawing the iron ore from the other numerous vast deposits hitherto of no value whatever to anyone, and which must remain so unaided by my system of transit. Taking into consideration that 50s., plus the transit from the interior, the logs taking to a very great extent two years from the forests to the steam saw mill at Lulea, has been the average wood-freight thence for the last decennial period, there is ample margin, favoured by the wood export, to effect a reduction of the ore freight. From leaving the mines to landing in England my plan presents no invention, no novelty, but merely a combination of long working systems. My letter in last week's Journal by no means says "le dernier mot" on this important traffic "la révélation de la jeunesse," as still another practical system presents itself perfectly distinct from the dual modes previously promulgated—an elevated railway with the centre of gravity of locomotive and trucks below the surface of the track, so that with the greatest velocity, which is thus only attained with perfect immunity from disaster, the rolling stock cannot leave the trajectory, and the traffic cannot be impeded by the heaviest fall of snow during eight months of the year. The shipment of the ore and wood from Lulea river will be in steamers identical with such as have been employed in the coal trade from the Tyne, Sunderland, and Hartlepool to London, provided with highest class data to satisfy the most capricious criticism as to working. The great problem to solve with the well-known fact before us that the Bilbao Iron Ore Company (Limited), whose shares were quoted in October last at 81. to 81. 10s., rose to 391. in January, and are now quoted at 341. to 371., last week's Shipping Gazette stating the arrival of 20 steamers is a matter of daily occurrence to load iron ore in the Nervio is cheap practical transport from Swedish Lapland, which is no longer a matter of uncertainty. Thoroughly acquainted with the topography, the mineral and forestal resources of Swedish Lapland, I have cursorily submitted my plan to the scrutiny of a gentleman long resident in that region, who has unreservedly expressed his approbation of same as perfectly practical. It is well known the Gellivare Company sent out an eminent engineer from London to survey the country from Gellivare to Lulea, having for the object the construction of a surface railway, which intention they very prudently abandoned, a surface railway being commercially impracticable in Lapland, the land of snow.—Little Toner-street, March 8.

WM. J. THOMPSON.

#### PUMPING-ENGINES.

SIR.—As compressed air is sometimes applied to driving pumping-engines in coal mines, on account of the convenience this motive power offers for actuating pumping and other engines underground, it may be well to advert to the six mines in which this power is used and the purposes to which it is applied. These six being the only mines in the two northern counties—so far as the writer is aware—in which compressed air has been adopted. In all the cases the compressors are placed at the top of the pit. At Seghill Colliery three underground pumping-engines are actuated by compressed air. One of these has 8 in. cylinder, 4 in. ram; it is placed 1600 yards distant from the pit, forcing water for 1300 yards of this distance, the ascent in this length being 120 ft. The other two pumps are doing similar work. At Ryhope Colliery two 33-in. compressors, with two steam cylinders, 32 in. by 5 ft. stroke, are erected; from these two or three hauling-engines, placed in the workings of the mine, are driven; there is sufficient power to apply it to other purposes. At Newbottle Colliery two compressors are erected; one of 24 in. compresses to 45 lbs., the other of 17 in. takes the air from the first and compresses to 200 lbs. per square inch. The steam cylinders are two—22 in. diameter by 3 ft. stroke. This machinery is only of a temporary kind until more perfect appliances are built. Six locomotive engines are used underground, and driven by the air at 200 lbs. initial pressure. The cylinders of these engines vary from 3 to 3½ in. in diameter, 6 to 8 in. stroke; capacity of air tanks 20 to 30 cubic feet; weight of each 14 cwt. and upwards. When charged with air at 200 lbs. pressure they run 900 yards inbye in seven or eight minutes; the running reduces the pressure to about 100 lbs. When again charged with air they run outwards over the same line in seven or eight minutes. Besides these the compressed air drives a small fixed engine and double-acting pump, 3 in. diameter by 8 in. stroke. This is placed 1600 yards from the pit, and the water is forced through 2½ in. pipes, with some rise to the pit. The compressor erected at Usworth Colliery has two 16 in. cylinders; steam-cylinders 16 in. One hauling engine placed underground a long distance from the pit is actuated by this machinery, and other hauling power will be added shortly. At Hetton Colliery and Rainton Colliery air-compressors are erected at each, the air being used principally, if not altogether, for driving coal-cutting machines.

These facts show the limited use yet made of compressed air for driving machinery, and more particularly pumping-engines, in the leading colliery district of this country; though it is believed the transition from steam to compressed air as a motive power in coal mines would soon show itself when a prosperous condition of trade takes place.

As an instance of the application of steam-pumps at the bottom of a pit, those at Gosforth Colliery may be mentioned; they were started over 10 years ago, and are still in operation. These are of the "special" type of pumping-engine, made by Tangye Brothers, of Birmingham. The steam cylinders are two 24 in. diameter, and the pumps two 7 in. diameter by 4 feet stroke. Two double-tubed boilers placed underground near the engine supply steam at 40 lbs. pressure. The engine is driven at the rate of eight strokes per minute day and night, forcing in one column, 187 fathoms in height, about 200 gallons per

minute. From the construction of the valves of these engines the steam cannot be cut off until the end of stroke, which is effected by means of tappets; the consumption of steam is, therefore, very great compared with compound and other expansive-acting engines. The same firm have more recently adopted the compound horizontal cylinder engine for forcing water from the bottom of pits, and for waterworks purposes. The first cost of an engine thus designed for draining mines is much less than with the method of 40 or 50 fms. lifts; the engine-house and foundations are less costly, while the numerous plunger-rod, ponderous rods, and pitwork of a deep mine are dispensed with, allowing more room in the shaft for other purposes.

A compound steam-engine with condensers has been erected at Boythorpe Colliery, near Chesterfield, by Tangye Brothers. The high-pressure cylinder is 21 ins., low-pressure, 36 ins.; two rams, 12 ins. diameter by 48 ins. stroke. These are placed 133 yards down from the surface at the side of the shaft. Steam is taken from the boilers on the surface at 45 lbs. pressure per square inch. The engine has been in operation day and night for three years. The pumps can be worked at 28 strokes per minute, or 224 ft. speed of piston. The vacuum in the condenser varies from 11½ to 13 lbs. Two compound condensing engines have recently been erected by the same firm for the Newcastle and Gateshead Water Company. Each engine has one 21-in. high-pressure and one 36-in. low-pressure cylinder; 10-in. rams by 4 ft. stroke. These engines are said to be as economical in use of steam as any other compound engines, and to be as efficient as any other kind of pumping-engine. The pumps are noiseless when in action. The horizontal compound pumping-engine erected at East Hetton by Hathorn, Davey, and Co., about five years ago, is placed on the surface, and works direct to two quadrants fixed at the top of the pit. The weight of the engine is 55 tons. The high-pressure cylinder is 34 ins., low-pressure 64 in. diameter, by 7½ ft. stroke. A condenser is connected to it. The duty of the engine is to raise 2000 gallons per minute 200 yards. The difference in consumption of coal between the present engine and the old engine formerly used at East Hetton for pumping at the same shaft is 75 tons per week, equal to 3900 tons per annum.—March 9.

M. E.

#### PUMPING ENGINES.

SIR.—I have just read with interest the letter of "M. E." in Saturday's Journal. I have seen the Davey engine at work, and it is a great treat to see it. The advantages as to safe and smooth working, cheapness of erection, and such like, are self-evident. But I should be much obliged if "M. E." or any other of your readers who know would state from actual observation what the "duty" of one of these engines is in foot gallons of water raised per hundred-weight of coal consumed, so that we could compare it with the best Cornish engines. Such information must be interesting to your readers, and would oblige—

D. B.

Haltwhistle, March 6.

#### ROCK-DRILLS.

SIR.—My attention has been called to a letter in last week's Journal relating to a trial between the Eclipse and the Schram rock-drills at Milford Docks. Allow me here to state the following facts. Having heard that the Eclipse rock-drill was at work at Milford since last year I agreed to send down one of mine on trial, and the only information I could obtain at the contractor's London office was that the drill points should be 2 inches in diameter. A friend lent me a man, who went to Milford to start the machine, and as soon as it arrived saw from the works they started a trial against an Eclipse drill, which was well worked in, and with which the men were accustomed to work in that particular rock—a very soft sandstone, which could easily be cut out with a pick. Not knowing the nature of the rock I sent a powerful No. 2 machine, and 2-inch cross-bits. The steam pressure which was used was 60 lbs. to the square inch. Now, my machines are constructed with a view to economy, and only require 35 to 40 lbs. pressure, and the consequence of using this enormous pressure was that my machine gave too powerful blows, the drill cutting so deep in that soft rock that it constantly stuck. The man who worked my machine finding that the pressure was too high for that soft rock tried to partially close the steam cock, but only with the result of throttling the steam, which decreased the speed. With a smaller machine making more rapid and less powerful blows the boring effect would have been very much greater. But this is not enough. The Eclipse used drill points 1½ in. in diameter, whereas those used for my machine were 2 in. in diameter; or take a hole of 3 feet in depth, the Eclipse only cut away 43·2 cubic inches, and my machine 111·6 cubic inches, or nearly three times as much.

As before mentioned, I had sent drills of the cross-cut shape. The man who worked my machine, and whose name I at the time did not even know, wanted to try another shape of drill, which would have cleared the hole better, but the sub-contractor refused to have it tried, and thus ended this so-called trial. In conclusion allow me to state that I shall not rest until I have had a fair trial against the Eclipse, and then I shall be able to publish results very different to those given from Milford. The machine I sent is constructed for hard rock, but I have a new construction for loose fissile rock, which would have been the thing for Milford had I before received any information with regard to the rock.

It is highly desirable that some of the mining institutions should arrange a fair trial of rock drills, stating beforehand all conditions under which each competitor has to enter, and thus put a stop to the contradictory correspondence on this subject which has for some time been going on in your columns.

RICHARD SCHRAM.

Denbigh, March 9.

#### PEAT IN EXMOOR.

SIR.—I notice in last week's Journal that a North Devon Correspondent writes you as to the peat lands of Exmoor. I beg to say that I have been over the whole of Exmoor, and have had out some hundreds of cart-loads of peat, which proved of poor quality. To form a company (or otherwise) to work peat remuneratively in Exmoor in my opinion is simply a bold undertaking.

FIVE YEARS' EXPERIENCE.

#### MINING IN LLANARNON DISTRICT.

SIR.—In looking over Capt. Ede's letter of last week I find that he says "I believe this district holds out such strong inducements to capitalists that no puffing is necessary;" and after stating certain circumstances as bringing themselves about he goes on to say "the district will again repeat its history, and once more establish its lead-producing qualities," and "there will again appear the former life and activity." I quite agree with the above quotations except that, if "puffing" is not necessary, which I do not wish to see in the sense in which the word is generally understood, I must say it is necessary that every good point of a mineralogical and natural character should be constantly and persistently, if need be, laid before the investing public in such a way and by such authority that it cannot be gained, so that as "things recover and confidence" is "inspired by a few real bona fide discoveries," the investing public may know at once when and in which district it will be safest to lay out the money it may be ready with for such purposes. I know this district is of such character as a lead-bearing district that it does not of itself require "puffing," but then everyone is not in the same position, and it is with the view principally to direct attention to this district that I would ask capitalists and investors to bestow special attention to what is going on in lead mining; and I have no hesitation in stating that there is no area of a similar size in the whole of North Wales with so small an outlay as promises so great a result in such a short time as this district of Llanarnon; and I feel quite certain also that in no part of North Wales would capital be more liberally met to develop the great resources of the district.

I must thank your correspondent, Mr. Fraser, for congratulating me on the progress being made with the amalgamation scheme I put forth some weeks since. To consummate it and carry it out such gentlemen as Mr. Fraser ought to lend all their efforts, as I am sure to be associated in the completion of what would be the largest and most probably the most profitable lead mining county in the Principality would be an honour to be desired by most men, and particularly by the mining experts who might be first connected with it. I wish I could induce the same spirit in others that I feel myself. We

would soon make Llanarnon "once more establish its lead-bearing qualities." There are many inducements to do this, amongst which are undoubted unexhausted and inexhaustible supplies of lead, cheap labour, properties obtainable upon very reasonable terms as to royalties and rents, good roads, in many places freedom from water at great depths, and a "liberal spirit" amongst present owners of private mines "to meet capitalists" who may desire to come in and form the properties into limited liability companies. All the above advantages are to be met with here, and as Mr. Fraser says, "the Westminister Mines have been among the richest and most productive in Wales," and "with the considerable addition of maiden ground adjoining" it will "constitute a field for mining enterprise as extensive and important as any in Flintshire and Denbighshire."

I am, Mr. Editor, doing my best to direct the attention of your readers to this important district, but I do not wish to be considered as "puffing," because to do so would be to try to expand to inordinate proportions some palpable falsehood, but here we have what can be seen, touched, felt, handled, worked, and valued, and made more valuable. For the present I remain—

March 4.

#### MINING ENTERPRISE.

SIR.—No one will attempt to deny that we, as a nation, are an enterprising people. Our endurable courage and perseverance annihilate dangers, difficulties, and even distance. The torrid, temperate, and frigid zones are alike penetrated, traversed, and explored by us. The hidden treasures of Lapland, Patagonia, the extreme East, and the Far West, as well as the intervening territories of the globe, are successfully uprooted and triumphantly landed on our beautiful and verdant shores. We appropriate to our use the gold of the Antipodes, India, and wherever the precious metal is known to abound. We climb the lofty slopes of the Rocky Mountains, and span their immense gorges with wire tramways for the transit of argentiferous minerals. We win pearls from their watery depths, and the African gems are imported to our shores. But apart from all this we are the lions of the day in the mining and manufacture of the baser metals. The ample resources of Spain in iron, lead, and copper are successfully within our grasp, and we use them to our advantage. Banca and Australia supply us with tin, and Chili with copper, while other countries are in like manner benefited by us. But what of our own resources at home. Are they nil? and if not why do we neglect them? Cornwall teams with tin and copper. County Durham and its surroundings is one of the richest lead mining districts in the world. Cumberland, Lancashire, and the coal districts contain iron ore almost without limit. Ireland produces copper, lead, and iron ores—in fact, the home supply of metallic minerals (except in a few isolated cases) for abundance, favourable conditions of mining and winning, is not to be surpassed in any part of the known world, and besides many risks attending foreign mining do not exist here. Notwithstanding this we pay very slender attention to the golden treasures we daily trample under our feet at home, while foreign enterprise has made us the wonder and admiration of the nations of the earth, who in consequence regard our islands here as great indeed, but comparatively destitute of metallic minerals of any kind. Are we, in consequence, wise as well as great? Doubtless we will leave posterity to be wise, while we are content with greatness abroad.

Darlington, March 10.

JUSTITIA.

#### LEAD MINING.

SIR.—It appears that doubts and fears prevail in the mind of the investing public as to the permanency of the advance in metals, consequently if a slight decline takes place there is depression and loss. When a sensation sets in a feeling that more consistency ought to have been shown manifests itself; since if the property is a sound one, possessing ample capital to work it, these doubts and fears have little, if anything, to do with the true intrinsic value of the same. The improved tone of business warrants those who have made their investments to retain them. As a true index of the value of lead, none better can be followed than iron. As a general rule, when iron is low so is lead, and when the former is advancing little fear need be felt as to the ultimate result of its value, since for both there is no known substitute.

All interested in mining, and those who have read the many able letters on the subject, will watch with pleasure the progress being made in the Cardiganshire mines. The letter signed "Investigator" in your valuable Journal of Feb. 28 speaks of the Bwlch United and of its ample machinery for each separate work. Being well acquainted with the property, I can fully endorse his remarks, and in addition would call attention to the large extent of buildings, material, &c., which appertains to it, and which must have cost a great sum. This mine is under very able management. The share capital is small, leaving a wide margin for an advance. In a short time the improvements to the dressing machinery will be finished, when the mine will be fully found in all that is requisite for the full development of such a large concern. I augur the most brilliant results for the fortunate shareholders, and to my mind the shares must have a great advance on their present quotation.

SHAREHOLDER.

#### PARYS COPPER CORPORATION.

SIR.—This property appears to have been galvanised into life and energy through the insertion of recent letters in the Journal. The report about to be presented to the meeting by the directors in a very few days contains elements indicating wealth and prosperity if the mine be properly looked after, and the shareholders' money expended in developing the resources. With about 5000l. in hand—11,000 shares unissued—I trust some of the big shareholders at the coming meeting will follow the example of Sir Charles Dilke, and demand details of Parys Copper similar to what he is, through the medium of Parliament, about to demand respecting the Waterworks Companies; 65 men only appear to be at work at Parys Copper, 265 ought to be employed sampling the enormous reserve of copper, admitted in the report about to be presented to the meeting to exist; but I suppose cash is needed to pay the directors their fees and the secretary his salary—all, I understand, living in London. However, I do not complain. I have bought shares at 10s., and sold some of them at 35s. It is the old shareholders I pity. The case lies in their own hands. Looking to the favourable report of the agent last week the shares ought in a few days to be far beyond their present price.

March 9.

LOOKER-ON.

#### PARYS COPPER CORPORATION.

SIR.—The shareholders owe a debt of gratitude to "Looker-On" for drawing attention to the management of the company, and I hope he will be able to attend the meeting to be held on Friday. The directors' report to be read at that meeting discloses the facts that the reserves on one lode alone are estimated at no less than 5000 tons, and that "more could be laid open faster than we could remove them." Surely it is unwise to wait for a further advance in the price of copper before disposing of the large reserves, more especially as the price seems likely to fall rather than advance. In the agent's report, also to be read at the meeting, it is stated that the total number of hands employed is only 65. Looking to the admission by the directors that the production of ore could be increased, but could not be removed, the necessity for the employment of increased force is manifest. Generally speaking I am opposed to interference with the directors and other officials of a company, but in the present case I think that the opinions of "Looker-On" will be shared by the great majority of the shareholders.

March 6.

ANOTHER LOOKER-ON.

#### POLROSE MINE, IN THE WHEAL VOR DISTRICT.

SIR.—This mine is again at work after a few months suspension in consequence of the late very low price for tin. This mine should be one of the great prizes of 1880, as will be seen by its having returned at the depth of 90 fms. or thereabouts over 12,000l. worth of tin from the Polrose lode and branches, upon which operations will soon be renewed below. The chief lode—the Margaret—which has for so many years produced so much riches in the Great Work Mine, for immediately to the west, will also shortly be explored at the 90 and 100 fm. levels in Polrose, to which points the sinking of the engine-shaft is directed. The levels above were too shallow for a great de-



posit of tin in this district from such a champion lode, yet even at the 80 fm. level (60 fms. perpendicular) it gave rich patches of this metal. The mine is ably conducted under the management of Capt. metal. The mine is ably conducted under the management of Capt. metal. The mine is ably conducted under the management of Capt. metal.

WEST CHIVERTON MINE.

SIR.—I notice in last Saturday's Journal the remarks of Capt. Southey on the above mine—"I am not afraid who comes here, because the course we have advised is honest, straightforward, and done for the benefit of all concerned." May I ask why he did not so speak for the benefit of all? In so doing he would have confirmed the report made by one of the former agents, who stated that the operations of the mine could not be carried on without making a loss of 5000l. per month. Notwithstanding the various circumstances in the favour of the present management—the low price of labour and materials, the high price of blende, and the pretendedly superior skill in the management—I am inclined to ask still, why it is that 1897 has been the average monthly loss for the last five years? Surely, the former agents were not so very short-sighted after all. I would ask who agents were not so very short-sighted after all. I would ask who agents were not so very short-sighted after all. I would ask who agents were not so very short-sighted after all.

DERWENT MINES.

SIR.—I was much interested in reading the letters in last week's Journal from your correspondents who so forcibly drew attention to these evidently valuable mines. It would be well if similar explanations were given of other mining undertakings. There is one thing which your correspondents have omitted, and that is the situation of the mines. I judge from its being stated that they are in the richest lead district in the kingdom that the county of Durham or Northumberland is alluded to, and that they are not far from some of Mr. Beaumont's celebrated mines. I should like to know how soon the expected new discoveries are likely to be met with, and when they would become available to augment the profits. I have had so many luring recommendations to buy into "good things" that when I come to consider them I get quite bewildered, but I have more than half a mind to follow the hint of your "Original Shareholder" in Derwent.—March 9.

THE DEVON COPPER AND BLENDE COMPANY.

SIR.—It must be a very great satisfaction to the people of Tavistock and neighbourhood that this company is successfully formed, especially as nearly all the shareholders are captains of mines and miners of the district and county. A lady whose husband made a great amount of money out of the Collacombe Mine has subscribed for a large number of shares, and has arranged to give 500 shares to the miners' wives of the district (who have taken shares), through the Editor of the Tavistock Gazette, should the allotment take place. Forest Hill, London, March 10.

THE DEVON COPPER AND BLENDE COMPANY.

SIR.—I have read with pleasure the correspondence in last week's Journal respecting this property—the old Collacombe Mine—which was a few years ago worked so successfully by the agents of the Great Devon Consols Mine. This being a proved property, and now blende is at the price it is, must return very large profits to the shareholders, but the business, I am told, now being privately treated for by the company, will be simply a mine of wealth, and require but a small capital to work. Lawrence Pountney Hill, March 10.

WEST DEVON GREAT CONSOLS.

SIR.—The comments of "Honest Investor" in last week's Journal were evidently dictated by private motives, either to depreciate the property in public estimation or affect the interest of the fortunate proprietors, otherwise his name and address would have been appended to the letter. It is possible, however, for even an honest man to be ignorant of mines and copper lodes, and the failures that frequently arise from want of sufficient capital to develop truly valuable enterprises like the West Devon Great Consols. Large sums of money are often squandered in extensive buildings, costly engines, and heavy machinery, and the great object for which a mine has started never attained. That something similar to this may have happened during the last working of this mine is manifest from the fact that the engine-shaft was only sunk to the 80, when by sinking 30 fms. more a junction of three or four masterly lodes would have been intersected, and great discoveries of copper undoubtedly made. Thanks to "Honest Investor" and his friends for doing so much useful work for the benefit of the present company. But supposing Mr. Editor, by way of argument, that every line of your very "Honest Investor" be accepted as truth; what does it prove? Simply this (which speaks volumes for the West Devon sett), that valuable mines may commence to work, and for want of capital be abandoned. Was not this the case with her nearest neighbour, Great Devon Consols, which on second working has returned over a million profit to the adventurers? Is not this the case with the adjoining mine, Gunnislake (Clitters), which after spending 40,000l. was abandoned, and resuming operations some years ago has since made large returns of copper, and is now about to enter the Dividend List, and destined hereafter to rival the Great Devon itself in abundance of copper and extent of riches? Has not this important fact been proven again and again in the history of mining enterprise; and who shall say, looking at the four splendid lodes that run through West Devon Great Consols, and the testimony of 30 well qualified mining agents, all declaring their most sanguine opinion on the merits of the property, that a future development of the rich lodes in this sett will not reveal a success of equal magnitude to those mines by which it is surrounded. Plymouth, March 11.

WEST DEVON CONSOLS.

SIR.—Your correspondent "Honest Investor" seems to lose sight of the fact that the discovery on this property is altogether distinct from the old workings, and that it is by no means a common occurrence for mines to be temporarily suspended, and then to be taken in hand by good practical miners who achieved success by working on different lines. Your correspondent "Honest Investor" is probably not aware, nor probably is the majority of your readers, that at the next property (Devon Consols) which was brought out in August, 1841, Messrs. Gard, Thomas, Morris, and others, when they started it, had nothing better to commence upon than such a lode as the fortunate shareholders in West Devon Consols now possess. Those gentlemen commenced by taking up an abandoned and so considered worthless mine called North Bedford, and clearing up an old shaft, and came down on a lode producing gossan, mundie, and spots of copper ore—nothing more than that. It had no value. It was simply a good looking lode, and the market value of the shares was about 2l. a piece. These gentlemen persevered, and in the course of two or three months they broke stones of ore—still nothing to value. But before long the lode increased in size, the mundie and gossan left it, and copper ore came in—in fact, such a mass of ore as enabled the shareholders to divide over 70,000l. amongst themselves in the first 14 months of their existence, and sent up the shares from 2l. to 600l. each in the market. West Devon Consols Mine has been taken up entirely by practical men. The shares were subscribed without prospectus or expense, and speedily rose to 12l., and are now 22l. or more, and many persons can make 100 per cent. profit; but if by a stroke of good fortune this capital lode should get into equal to what its appearance seems to predict then the shares will run up many pounds, and the present buyers will obtain a splendid result. The work done by the

late adventurers is so much time and money saved, and will be utilised at a later period, and this alone is worth 4l. or 5l. per share. I am only a moderate holder, and could make a handsome profit on my shares, but I shall wait contentedly. ANOTHER INVESTOR.

SOUTH VAN MINE.

SIR.—I have much pleasure to hear from good authority that the South Van Mine, Llanidloes, is to be worked again. This mine was first discovered by Capt. Richards, a man of great practical experience in mining, and I understand he is to conduct the operations at the mine again. The lode which has been operated upon is in the neighbourhood of the Van Mine, and in the same stratification, and is of great width; and by sinking a little deeper it is fully anticipated by all mining captains who have inspected it that large deposits of lead will be met with. There are other lodes contained in this sett of a highly congenial character. I should not be surprised to hear at any time that a large body of ore would be cut into, it being in close proximity to several rich mines. A. B.

WHEAL BASSET AND GRYLLS.

Mr. Earnshaw has forwarded to us a very long recital of the grievances he has suffered through having become a shareholder in this property. But for this we cannot afford the space required for its publication; the nature of his annoyance, however, will be understood by the following extracts from his letter:—SIR.—There is nothing but truth in all that I have said. But this is the worst, and a very ugly, feature in the unwritten history of this mine—that from my first connection with it I have received at no time, up to yesterday, a prospectus, an agent's report, a statement of accounts, or a balance-sheet. Nothing whatever but notices of meetings to be held, and of calls made. How the money has gone is a pure mystery to me. I am a shareholder in such creditable mines as Dolcoath, the three Pevors, and others in Cornwall, but never did I see or hear of any mine so operated as this of Basset and Grylls. I seem to have been led into it by a strange fatality which, notwithstanding my past and prospective losses may fulfil a good office, as an alternative medicine does often. . . . I have no reluctance whatever in attaching my name and address; and if there are any past or present adventurers in Basset and Grylls whose attention is attracted to this letter, I cheerfully offer to subscribe a sum (say) of 25l., or any sum proportionate with theirs to the number of my shares (50) towards a fund to be spent in a legal way for a searching investigation into the formation, management, and monetary concerns of this mine. Because, after all, our liability is still without a limit, and who knows how all the money subscribed and "called" has gone? I do not. H. G. EARNSHAW. Court St. Lawrence, Monmouth, March 9.

"CAUTIOUS," AND MUSHROOM MINES.

SIR.—The tone of virtuous indignation in which your four correspondents in last week's Journal assail "Cautious" for pointing out the nature of the mines in the Chiverton district might have had some small shadow to palliate their polite language had they been able to point to any shareholder receiving, especially from East Chiverton, the long desiderated lead to make "a spoon." No doubt we have flourishing accounts that lead has been sold at 22l. 4s. a ton, and that enough silver was produced to make "a massive service;" but it would be more gratifying to those who have sunk their money in East Chiverton and have held on for eight years, as I have done, if they could point to a single penny of remuneration to any but the miners and some others who may have an interest in keeping such concerns going. It is of no avail to speak of "chances between the 74 and 90 fm. levels producing thousands of tons of lead." The presentation of something, even in the shape of a "spoon" dividend, would be far more gratifying than any amount of detail of money sunk without recovering a sixpence to the shareholders. It would be well that those inclined to speculate in such mines as the Chivertons, and dozens more I could name, should enquire what were the prices of the original shares; and how it comes about that those that started with 12l. should now be marked at 9l. without ever having paid a single dividend. My name cannot affect the facts, and so I subscribe myself—DEAD LOSS. [For remainder of Original Correspondence see this day's Journal.]

SOLID NICKEL BRONZE VERSUS NICKEL PLATING.

In our notice of the Mining Exhibits at the Applied Science Exhibition, Paris, we proposed to devote a separate article to the operations of the Société Française Anonyme de Nickel, 38, Chaussée d'Antin, Paris, owing to the richness and purity of the Garnierite deposits in New Caledonia, and the improved methods of treatment devised by their discoverer, M. Jules Garnier, are bringing about a revolution in this branch of metallurgy, and, indeed, in the whole nickel trade. Whereas, formerly, France was dependent upon other countries, including Germany, Austria, and Sweden, for her supplies of nickel ore, she is now enabled to supply the metal itself to those very countries, and at so moderate a price as to warrant the belief that before very long solid nickel bronze will completely supersede nickelised brass and copper in most branches of manufacturing industry. Not only is the thin coating of nickel deposited by galvanic action liable to peel off, but also the wear due to cleaning, as well as ordinary use, soon exposes the yellow metal beneath. On the other hand, articles made of the new white nickel bronze are the same all through their substance, and with a mere ordinary cleaning present that pure tint and dull lustre which renders this metal so pleasing to the eye.

DISCOVERY AND NATURE OF THE ORE.—In 1863 M. Jules Garnier was entrusted by the Minister of Marine and the Colonies to explore the mineral wealth of New Caledonia, the French penal settlement, and was soon attracted by a beautiful green mineral enclosed in the magnesian rocks which form the backbone of the island. He sent specimens to the Rev. W. B. Clark, Geologist to the Government of New South Wales; Professor Liversidge, of Sydney University; and Professor Dana, the American geologist, who unanimously gave the name of garnierite to the new mineral in honour of its discoverer. Garnierite differs from limonite, with which it is sometimes compared, in being a hydrosilicate of nickel and magnesia, whereas the latter is merely an oxide of nickel or silicate of oxide of nickel, generally contained in an aluminous gangue. The veinstone of garnierite is slightly translucent, and appears to be a sandy argillaceous magnesia contained in magnesite, or meerschaum. M. Garnier is of opinion that garnierite is contemporaneous with the magnesian rocks, having been deposited while in solution in hot silicious water in the numerous clefts, of greater or less extent, which divide the serpentine. It is here that the ore occurs in the greatest purity and abundance, though it is also met with in the diatase rocks, the diorites, and the amphibolites. It is presented in the form of a coating, of nodules, or of threads, as well as in actual veins, either in fragments or dust, owing to the brittle character of the mineral. The nickel is associated with iron, chrome, and cobalt, but neither sulphur, arsenic, nor antimony are present. The following is an analysis of an average or typical specimen of garnierite:—

	41	Oxygen.
Silica	19	22
Protoxide of nickel	16.4	4.07
Magnesia	0.6	6.56
Alumina	trace	0.28
Lime	20	18
Water	3	—
Gangue	100	—

Professor Dana assigns it the formula— $(Mg \cdot Ni \cdot O) \cdot 10[SiO_2] \cdot 3H_2O$ ;

But M. Garnier, after many analyses, considers it should be represented by— $(Mg \cdot Ni \cdot O) \cdot SiO_2 \cdot nH_2O$ . The principal point in New Caledonia at which the ore is worked is Kanala, on the north-east coast towards the middle of the island,

where its contents in oxide of nickel varies from nothing to about 40 per cent. It is also met with in the serpentine formations commencing in the south, where they occupy the whole breadth of the island, whence they continue along the eastern coast to Nouméa, and in the west to the northern extremity, where they include the islands of Néba, Yandé, and Bélep.

TREATMENT OF THE ORE.—The fragments of minerals may be divided into five categories:—Pure and tolerably compact ore; ore serving as a coating for the nodules or conglomerates, composed of the debris of serpentine rocks; ore simply colouring magnesian clays more or less ferruginous; ore filling the clefts of a millstone grit associated with the serpentine; and ore in thin flakes alternating with flakes of pure silica. As the rocks forming the ore are intimately associated, and are of very nearly the same density as oxide of nickel, there can be very little mechanical separation of the pure ore from its gangue. All that can be done is to effect a preliminary riddling, so as to separate the large from the small pieces. The small ore, according to circumstances, ground or conglomerated before being charged into the reducing furnaces, while the large are classified according to their percentage of nickel, the product to be obtained, and the system of treatment to be followed. Some of the fragments are sufficiently large and compact to be dealt with in their natural state, but the rest are previously ground and conglomerated.

M. Jules Garnier, who takes an active part in the company's affairs, has devised and patented two separate systems of reducing the metal from the ore. The first consists in simply melting the ore in a special furnace with sulphurous substances, such as iron pyrites or sulphide of calcium, in which case the object is to reduce all the oxide of nickel, and as little as possible of the oxide of iron. In this way a sulphide of nickel and iron is obtained, similar to the matte of the old process, but containing more iron and less sulphur. At any rate, it may be of such composition that it can be pulverised, and then easily dissolved in acid, when the ordinary dry method is followed. This system is chiefly employed for the manufacture of sulphates of nickel for electro-metallurgy.

The second method consists of two separate processes.—1. The ore is subjected to a reducing fusion in a blast-furnace of such a height and shape that not only is all the oxide of nickel reduced, but also the metallic nickel is sufficiently carburised to become deposited and to remain liquid in the crucible of the furnace. Naturally, the greater portion of the iron contained in the ore accompanies the nickel, and a carburated regulus is obtained, consisting of nickel and iron, which is tenacious and tolerably malleable.—2. This regulus is melted on the hearth of a reverberatory furnace, and subjected to oxidising action. The carbon and the silicon pass off first, and afterwards the chromium, manganese, and iron, which assumes the state of oxides, and then of scoria, in the order of their affinity for oxygen. The nickel which remains is either run into pigs, or, if in a ball, is cut up for the market.

It is this second method which is chiefly employed for producing nickel commercially pure. The first process is conducted at Nouméa, the capital of New Caledonia, in furnaces erected by Messrs. John Higginson and Co., the concessionaires of the ore, who have also contracted to supply the Société Française Anonyme de Nickel with as much regulus as they may require. As this substance contains as large a proportion of metal as 70 to 80 per cent., a great saving is effected in the freight. The second process is carried on at works put up by the company at Septèmes, near Marseilles, placed under the management of M. Thiollier.

PRODUCTS.—The most important products of the company are ingots and granules containing 99½ per cent. of pure nickel, which is guaranteed, and ½ per cent. of utilisable metallic substances, the remaining ½ per cent. being waste. These are for mixing with other metals in forming various alloys, such as the white nickel bronze, containing on an average 20 per cent. of nickel. Though the company do not themselves produce these alloys, they undertake to inspect the casting of the ingots at the works of the most skilful French founders, and to guarantee their quality. They also supply anodes, or plates, of nickel absolutely pure, for restoring to the galvanic bath the metal taken up by electro-deposit, as well as salts for forming the bath, though they are endeavouring as much as possible to supersede this use of the metal by the solid nickel bronze. These salts are the double sulphate of nickel and ammonia— $So^2 NiO, So^2 Az H^2 + 7H_2O$ , For nickelising cold, and the simple sulphate of nickel— $So^2 Ni O + 7H_2O$ .

Which serves for hot nickel-plating—a quicker process than the former, but giving less satisfactory results.

MANUFACTURED ARTICLES.—M. Jules Garnier observes that nickel is one of the most impressionable metals which exist, and that infinitesimal doses of certain substances are sufficient to change its qualities. He has devoted much attention to the formation of various alloys containing from 17 to 30 per cent. of pure nickel, and also copper, zinc, and tin, the melting of which does not take more than from 5 to 10 minutes—no longer, in fact, than ordinary brass or gun-metal. These alloys are easily worked and soldered, leave no smell after being handled, and become whitened if plunged into acid or leaving the mould; they vary in tint, according to the mixture employed, from silver white to a greenish or bluish white and the much prized hue of oxidised silver. Nickel bronze—the alloy most generally used—has various percentages of nickel, according to the purpose for which it is to be employed, but to be white and unoxidisable it should contain at least 20 per cent. of pure metal.

At the Applied Science Exhibition the company brought together manufactured articles connected with every branch of industry, contributed by upwards of 40 sub-exhibitors, with the object of demonstrating that all articles made of brass or copper nickel-plated may also be produced in solid nickel bronze, which is the same all through its substance. All operations, whether casting, rolling, drawing, beating out, turning, chasing, or engraving, are performed with the same plant and by the same processes as in the case of brass or copper, and at practically the same cost, while the finished articles are 20 per cent. stronger. Among these may be especially noticed the castings of Messrs. Lehmann Frères and Messrs. Gaspard and Belle, the cocks and taps of Messrs. Sécutowicz and Huber, the quincaille of M. Gits and Messrs. Rivain and Besant, the locksmith's work of Messrs. Vaillant, Fontaine, and Quintart, one of the earliest firms to employ nickel bronze. There were, besides, the vessel fittings of M. Quinier, the grease cups of M. Mancort, the carriage work of M. Horstmann, the stable fittings of M. Laloyard, and the harness mountings of the Maison Million. The white German silver table services of M. Lange, very different from the yellow alloy that has hitherto been known as German silver. Nor is the use of nickel bronze confined to purely industrial purposes; it is equally capable of finer applications, as evidenced by the stamped and engraved work of Messrs. P. Echart and Co. and M. Foucault; while for surgical instruments, as exhibited by M. Demeure, it is eminently suited on account of its non-oxidizability. In arts it is capable of wide application. Bronze statuettes were shown by M. Pinedo and M. Norman; and mirror frames by M. Carpentier. M. Girandon has succeeded in producing a highly pleasing effect in his art furniture by covering it with the skin of the China shark, inlaid with nickel bronze. Finally, the goldsmith's art applied to nickel bronze was represented by M. Chertier and Messrs. Gruhier and Tranchard.

M. Laroque has found that a small percentage of nickel added to steel increases its strength, and that tools made of this alloy stand better than those of steel, while they are not liable to oxidation. Railway wheels, rolls, parts of machines, anvils, hammers, hatchets, and other edge tools, and also a torpedo needle made of acier Laroque, attracted a considerable amount of attention at the Exhibition. M. Crouzet-Hildebrand showed a fine-toned bell of nickel bell metal, and it is said that he intends henceforward to employ this alloy exclusively.

In conclusion, it may be stated that, thanks to the almost inexhaustible deposits of ore in New Caledonia, and the methods of reduction which have been much simplified by M. Garnier, pure nickel can now be sold at about half the price demanded three years ago. A gold medal was awarded by the jurors of the Paris Exhibition of 1878, two diplomas of honour at the Applied Science Exhibition, Paris, 1879—one for raw materials, the other for finished products—and the same prize at the Marseilles Industrial Exhibition of last year. Those of our readers who are interested in nickel and its ap-



lications will be glad to know that the English agents are Messrs. Charles Watson and Co., 29, Great St. Helens, London.

#### REPORT FROM CORNWALL.

March 11.—It is not accurate, strictly speaking, to say that the tin standard dropped 5*l*. last week, though in effect 5*l*. lower prices were paying when the week closed compared with the figures of the week previous. The only announced official drop was one of 2*l*.—the fall of 3*l*. was due to an understanding on the part of smelters that without definitely altering the official figures the lower price should be paid. It is worth while indicating the distinction, because, after all, there is a difference, and one which, however little it may obtain immediately, is in favour of the mines to some slight extent. The mere fact that the smelters did not think it advisable to make an official change shows that they believed the market had been acted upon of late less by general and commercial than by casual and speculative influences, though both causes have had their weight. Moreover, it is very well known that the official standards themselves are no longer the absolutely fixed Medes and Persians enactments they once were; but, in sympathy with circumstances, and the tone of the market, are open to more or less of qualification. This is still more the case with a semi-official determination such as that announced last week, and in point of fact the prices then set forth have not been absolutely adhered to in all cases since. We think it better, on the whole, that while there are official standards at all they should represent the true facts of the case and the current state of the market; but still, while there are such things as unofficial figures current it is desirable that their true bearing should be pointed out.

We are afraid that under present conditions little improvement can be looked for for some time to come. Suddenly, and without the least note of direct warning, the country is plunged into the throes of a general election, which must, of necessity, grievously interfere with the current of trade. The farmers have been considered—for their interests are less affected now than they would be by a dissolution at any other period of the year; but in our general commercial relation, it is, perhaps, one of the worst seasons that could have been chosen. At any rate, now we can anticipate no change of importance in the metal markets until the elections are fairly over, or, at least, well on their way; but early in April or towards the middle we may expect something in the shape of a revival. Our confidence in the steady course of events is not in the least shaken—for the mere fact of a slight backward movement by no means goes against but rather, as in the natural order of events, confirms the rising of the tide.

Here we are less interested in questions of Imperial politics than in the effect which the election may have in the representation of the vastly important mineral interests of this country. It is too early yet to speak with absolute confidence, but there is already reason to believe that in this respect the role of Cornish miners will be improved. There is no talk of opposition to Sir John St. Aubyn and Mr. A. P. Vivian in West Cornwall. Sir John has mastered the details of all mining legislation so far as it affects metalliferous mines in a way no other Member has done, and is the acknowledged leader of the county on all questions connected therewith. Mr. A. P. Vivian's intimate connection with smelting and the metal trade is too well known to need comment. In East Cornwall Mr. Robartes, the only son of Lord Robartes, one of the most liberal lords of mines in the county, and the supporter of the Redruth Miners' Hospital is likely to succeed Sir Colman Rashley, who retires. At Truro Col. Tremayne retires, and Mr. Brydges Williams, who is largely associated with mining and its kindred industries, has announced his intention of again standing. At St. Ives Mr. C. C. Ross, a local banker and a man of business, connected also, though not so intimately, with mining, is in the field. In other local constituencies the prospective candidatures or changes are not of importance from our present point of view, but it will be seen that there is a good prospect of a more practical character being given to the representation of the county. No announcement has yet been made from Devon that will in any way affect the issue.

Mr. J. H. Collins, F.G.S., of Truro, is now pursuing a series of important investigations of a most laborious nature into the character and origin of the Cornish tinstones, and will be glad to receive for comparison, &c. (to be duly returned), any good specimens of wood, tin, and the like. The results of his investigations will be shortly published in the Mineralogical Magazine. Mr. Collins is also engaged in studying the serpentine and other rocks of the Lizard district; and is still pursuing his original investigations into the age of the rocks of West Cornwall. It is a graceful and appropriate recognition of his labours that the Committee of Council on Education have, on the recommendation of the Government Fund Committee of the Royal Society, again made a grant of 30*l*. to Mr. Collins to aid him in his chemical, mineralogical, microscopical, and geological investigations of our Cornish rocks.

P.S.—Since writing the remarks above the smelters have decided upon making the drop of 3*l*. official, bringing the standard to the level of actual facts. The announcement had of course little effect upon the local share market when the conditions were thoroughly understood, but elsewhere the movement may be taken as indicating a new drop, and not as confirming an old one. This is the disadvantage of this course.

#### REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

March 11.—I hope when I visit Llanarmon next time to have the pleasure of seeing Captain Ede, whose letters, even if one differs from parts of their contents, are courteous and fair in their spirit. By a singular mischance "Enquirer" has altogether missed any favourable references to the district, and his last letter leads me to suppose that he really does not know as much about the district as he would have us suppose. Otherwise, if he knew the mountain road from Llanarmon to Mold, along a portion of which only I pictured the mining desolation that prevails, how could he conceive my scudding about the country in a pony trap? The pony I use generally is "Shanks," and although I am not as young as I have been I would not mind a good long day's mining exploration with "Enquirer" when his temper has recovered its wonted equanimity. The report of the Dyflife Mine is favourable and hopeful. I am pleased to see, following up Mr. Dean's letters to the Journal, that he has partly recovered the lost lode of Llechwedd-ddu, and I trust that with the good prices now ruling the present year's operations at the mine will be as prosperous as the owners hope. I admire also the spirit of the Cwm Dwyfor proprietors in their determination to complete the exploration of the Brynryan property in depth. They should find something along the 20 fms. level west in their new trial shaft. They deserve that the hill should be, as its name implies, a silver ridge to them.

Mr. Rudler, F.G.S. of the Royal School of Mines, who since his connection with the University College of Wales, at Aberystwith, has taken a great interest in Welsh affairs, has issued a paragraph on scientific education in relation to mining and agriculture in Wales. He repeats with emphasis remarks which have often appeared in these reports and elsewhere, that while there is a sufficiency of lead in Cardiganshire to repay legitimate mining the industry is ruined and brought into disrepute by the financial operations with which it is associated.

Prof. McKenny Hughes, F.G.S., of Cambridge, whose geological power and reputation is high, and who is, to my mind, a true type of a cultured Welshman, has made a mistake, I think, in assigning the rocks of North Anglesey to the "Bala group," even including in that group portions of the underlying Llandeilo strata. There can be no question, I think, on mineralogical grounds alone, that the copper-bearing strata of the Parys Mountain belong to the upper portion of the Lower Cambrian group of Sedgwick. I know Prof. Hughes's anxiety and determination to do justice to the classification of his great predecessor. Still he must not be too eager to attain the desired result.

The Nantlle Valley drainage scheme has been thrown out by the Lords Standing Orders Committee after it had been allowed by the

Committee of the Commons, on the ground that the clause authorising pumping arrangements had not originally been inserted. The promoters offered to withdraw the clause, but in vain. Of course, parliamentary rules and regulations must be maintained, but it seems a pity that a beneficent scheme like this should be postponed.

Mr. Ellis Roberts, manager and late owner of one of the Coed Madoc, a slate quarries, Nantlle, has been honourably acquitted of the charge of falsely signing a ship's bill of lading in order to obtain money from a firm of slate merchants near London. Mr. Commissioner Kerr, before whom the case was tried, stigmatised the prosecution as it deserved, and expressed his determination to trounce it in costs. Still this cannot compensate Mr. Roberts for the annoyance and anxiety the unjustifiable proceedings have occasioned him.

The works of the Maenclochog and Fishguard Railway are being pushed forward, and judging from an influential meeting of the Whitland and Cardigan Railway just held there is every prospect of an early commencement of the works between Crymmych and Cardigan, for which the rails are actually purchased. This extension will bring the Tregaron Slate and Slab Quarries into communication with the outer world.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

March 11.—At the meetings of the iron and coal trade yesterday and to-day business suffered by reason of the excitement into which the district has been thrown by the sudden dissolution of Parliament, the more so as the largest pig-iron maker in South Staffordshire—Mr. Alfred Hickman, of the Spring Vale furnaces—is likely to be the conservative candidate for Wolverhampton. Native blast furnace proprietors are pushing their product more than heretofore in districts outside South Staffordshire, and are attempting even to do a foreign trade. All-mine pigs are now quoted at 4*l*. 10*s*., and cinder pigs 3*l*. per ton. The New British Iron Company are making preparations to blow in another furnace at their Congreaves Works, Cradley Heath; and so, too, are Messrs. Turley. Finished iron is not in increased sale upon the week, nor can prices be reported as stronger; yet the marked bar firms demand 9*l*. per ton, and the Earl of Dudley 9*l*. 12*s*. 6*d*. for his common bars. Medium bars are plentiful at 8*l*. 10*s*.

Native ironstone is in large demand by the makers of best pigs, and such people are willing to give long prices; gubbin ironstone is fetching 20*s*. per ton. The coal trade is without alteration upon the week. Forge qualities are from 6*d*. to 9*d*. per ton lower than at the close of last month.

The directors of the Sandwell Park Colliery Company have issued the following circular to the shareholders:—"The revenue account for the half-year ending Dec. 31 shows a satisfactory surplus, from which the board will pay an interim dividend of 5 per cent. per annum upon the paid-up capital. This company has participated in the improved prices for coal during the latter part of the half year. The period, however, having been so short in which substantial benefit could accrue, the directors consider it prudent to wait until the close of the financial year before distributing a larger dividend."

On Wednesday in Wolverhampton the Bilston and Tipton committees under the South Staffordshire Mines Drainage Acts met jointly to discuss the scheme for the unwatering of the mines in the Bilston district by extending the boundaries of Tipton. They were assisted in their deliberations by Mr. Henry J. Marten, one of the legal arbitrators. He explained the bases upon which his colleagues and himself had arrived at the calculations and conclusions set forth in their report upon Bilston mines drainage, certain of which the Commissioners had thought were erroneous. After a discussion extending over some hours, the subject was adjourned for further consideration until April 7.

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

March 11.—There has been no change in the condition of the lead mines in the Matlock, Peak, Eyam, and other districts, whilst the weather has been in every way favourable for mining operations. The production of ore, from all that can be gathered in the widely scattered districts, appears to be something like an average. Still it can only be said that there are comparatively few mines that are being worked to any appreciable extent, or that can be said to really pay. Many of them are worked realising, perhaps, miners wages to those who have them in hand and no more, so that whatever honour may attach to having the reputation of being a mine owner under such circumstances there is certainly not much profit. The collieries in several parts of Derbyshire have not been so busy as they were early in the year, and there has been a falling off in the quantity of coal recently sent to the Metropolis from several of the leading places, and a still further decline must be looked forward to as the fine weather approaches us. Prices, too, are very low, and cannot now be expected to get better, but rather the reverse, as the consumption declines. Steam coal, which has been particularly dull for a long time, is beginning to go off rather more freely, whilst a little more is being done in engine fuel, a fair tonnage being sent into Lancashire, especially to Ashbury, and other places on the Manchester and Sheffield line of railway. Coke is in good request, and a large tonnage is being forwarded to Sheffield for the use of the iron and steel smelters. The make of pig in North Derbyshire and along the Erewash Valley is kept up to the full average, and whilst the business keeps up prices are not so firm as they were, as buyers appear now to look forward to a reduction, so that very few indeed are inclined to purchase at present rates for delivery two or three months hence, but are rather inclined to buy sparingly. The local consumption, however, is still large, for some of the foundries are busier than they have been for a long time. In manufactured iron a steady business is being done, a considerable quantity of merchant iron being sent to Sheffield. The steel rail works at Dronfield are still active, and with the orders in hand will be so for some time to come.

Trade in Sheffield goes on much as usual, most branches being in a healthy state, and the hands well employed. Makers of the best qualities of pig-iron have had plenty to do, owing to the brisk demand there has been for every description of steel both raw and manufactured, but prices have not advanced. For ordinary brands of iron from Lincolnshire and mixed ores a steady business has also been done. Manufacturers of every description of iron and steel goods have been working well, and there have been no complaints as to prices for a considerable time past, a proof that the trade is in a really healthy state. Taking the heavy branches, we find that the mills have been running well, there being good orders for heavy armour as well as ship and boiler-plates, sheets and telegraph, and other kinds. Makers of Bessemer rails are fully as active as they have been, and there is also plenty to do in points, switches, tyres, and axles, both on home account and for exportation. In the best description of cutlery, including table and pocket knives, a steady business is being done, America being still a good customer. Makers of crucible steel are now doing well, the demand having considerably increased of late for the plain as well as the manufactured material, a good deal being none in wheels for colliery owners. At the foundries there has recently been a change for the better in both light and heavy castings, more particularly those required in building operations. Machinists and engineers are also more favourably off for work, and the same may be said with respect to boiler makers and wagon builders. In the South Yorkshire district the coal trade is not quite so active as it has been, there having been a decline as regards household qualities, whilst the pit prices are so low as to leave no profit whatever to the owners. Steam coal and slack, however, are in better request, and prices have an upward tendency. A good deal of coke is being sent into North Lincolnshire, as well as into Sheffield, and being made from the slack is now about the only profitable produce of the collieries.

At the Monk Bretton Colliery, near Barnsley, the men have been on strike since September last, and show no disposition to resume work, being well supported by the miners who are in work. On Friday last some of the day men at the colliery belonging to the Barrow Hematite Company struck, as it was said they were not to participate in the advance given to the miners. On Saturday the miners also turned out, and the colliery ceased working. It is ex-

pected, however, that a settlement will be come to before the end of the week.

On Thursday the 4th inst. two colliers were killed at Staveley whilst loading coal at the Seymour pit by a fall of bind. It is not often that loaders are overtaken by falls, as the roof is supposed to have been left quite safe. The quantity of bind that fell upon them weighed from 5 to 6 tons.

Mr. William Clarke, of Marchay, Ripley, for many years mining agent for the Butterley Company, died suddenly a few days ago. Deceased, who was greatly respected in the district, was a director of the Ripley Public Hall Company, and a liberal contributor to the various charities in the district with which he was connected.

#### TRADE OF THE TYNE AND WEAR.

March 10.—The output of steam coal in Northumberland has been much increased at many works of late. This has been done at the extensive works at the Seaton Delaval, and a new locomotive and 100 large coal wagons have been purchased by the company, in addition to their rolling stock. The output of this coal at Ashington is also being largely increased, and the new seam lately opened there (6 ft. in thickness) will give employment to 200 additional hands. The Baltic trade is now opening out, and an increased demand for this valuable coal is anticipated. The coal shipments at Tyne Dock have been below the average, and the house and manufacturing coal trade on these rivers is rather great, it is evident that pits are being re-opened too quickly to enable the coal masters to secure higher rates, and consequently coal in many cases is sold at rates barely remunerative. The anxiety of coal masters to render productive capital lying dormant of course induces them to open out these pits, but this movement is proceeding too rapidly. The Team Coal Company are about to open again the Allendale Colliery, situated on the west side of their royalty.

The Hutton seam, which yielded a valuable house coal on the eastern portion of this field was worked out some time ago, but it is expected that the seam will be again worked on the west side of the estate. A new shaft has been commenced at East Howle Colliery in South Durham. The Gas Coal and Coking Coal Works in Durham continue to be well employed, as most of them have contracts which will keep them employed during the present year, most of them have also secured fair prices for their produce. We learn from Browne's Export List that there has been a considerable increase in the coal exports of last month from the north-eastern ports as compared with the exports in the same month of last year. From the Tyne the figures are—for February, 1880, 278,417 tons, against 204,696 tons in February, 1879, and at all the other ports in the Wear, at Blyth, Seaham, &c., there is a considerable increase.

The Iron Trade has been rather disappointing lately; a lull has taken place. With declining stocks and a scarcity of iron in the market prices ought to have been firm, but the large decline at Glasgow has disturbed the market here, and a slight panic has ensued. Small parcels have been offered at 58*s*., but quotations generally are far above this figure, and it is difficult to fix them. There is, however, still much confidence in Cleveland amongst large makers, and the value of this iron at present is about the same as Scotch iron. It is believed that the great fall in Scotch iron is due to speculation. Shipments of Cleveland iron continue large, about 10,000 tons have been sent to America within a week. The stock in Cleveland is now 265,000 tons. The manufactured iron trade is much duller, new orders being more scarce, and less prices have to be accepted about them than the current rates for contracts. The bulk of the pig-iron stock is held by parties who are likely to hold it, and it is not likely to be thrown into the market. The importations of Spanish iron ore at the Tyne Dock continue large, and the ore is also very largely imported into the Tees.

The ore from Bilbao, &c., imported into the Tees during the past week have been the largest known in the history of the trade in the North of England, over 20,000 tons having been delivered. Nearly all the imports have been for the firm of Bolckow and Vaughan, who have entered into large contracts for the purchase of the ore. This large increase has caused some surprise, as it was supposed that the import of Spanish ore would be stopped, and Cleveland ore substituted for it, but this impression is now proved to be groundless. The rolling-mills at the Tees, where thin sheets are made, are doing well, they are quite full of orders; this is the only manufacture of the kind in the district, sheets are rolled from 1-16th to 1/2 of an inch in thickness, and there is an excellent demand for them. The furnaces are being got ready for lighting at the Walker Iron-works; these works are amongst the oldest and were once the most extensive of the kind in the North of England.

The news of the dissolution of Parliament has caused a considerable sensation in this district, and the conflict between the political parties is likely to be a severe one, although, happily, not so protracted as it was in the olden times, when the polling sometimes continued two and even three weeks. Contests are expected in most of the boroughs and counties in the North, but it is not likely that Sir George Elliot and Mr. J. L. Bell, or other leading men in the coal and iron trades, will be disturbed in their seats; at any rate that is the impression at present.

#### REPORT FROM THE FOREST OF DEAN.

March 11.—The district has suffered so enormously from ill-judged, not to say reckless, policy that we cannot refrain from recurring again to the subject, even though some may think that sufficient has already been said. The question of policy is one of vital importance, seeing that an ill-judged course of procedure has for the time being all but ruined the local Coal Trade. Complaint is made that the Forest proprietors cannot be depended upon for steadiness of prices, but that the coal masters are so frequently changing prices that trade, and especially the retail trade, becomes disorganized and frequently checked in consequence. The capricious and frequent changes expose merchants to suspicion and loss; as explanations are not always satisfactory or accepted by customers, however truthful they may be, in cases of sudden rises in quotations. Besides, any policy that upsets and disorganises trade must be a bad one, because it defeats its own purpose. The two advances of 1*s*. a ton each time, the first in autumn last, and the second in December, constituted a strain that the markets would not bear. The first shilling answered very well, and an excellent trade was done at that advance; but immediately the second shilling was put on, the trade went almost to nothing. The very fact that the traffic returns for coal out of the Forest by the Great Western Railway (Bull's branch) fell off to the extent of 500*l*. a week was proof of the fearful mistake that had been made, and the heavy losses sustained not only by the railway interest, but the coal proprietors themselves. For not only was it felt by the Great Western Company, but also by the Severn and Wye and Severn Bridge Company—the total loss, therefore, must have been enormous. The matter was referred to in the railway report recently issued, and also dwelt upon by the Crown official at the recent *Quare*, dinner at the Speech House Hotel. But whilst capitalists suffered great losses, another class has felt even more painfully—we allude to the working colliers, who have been reduced by the erroneous policy to semi-starvation. One of the local proprietors has been rather thin-skinned under the strictures and criticisms of the public press, notwithstanding that he has been written, so far as we know, with a view to correct mistakes and benefit all parties concerned in the business. A great man, centuries ago, in writing to certain people with a view to correct specific evils, and knowing the likelihood of the interested view to umbrage, put the important question for their consideration—"Am I your enemy because I tell you the truth?" It was rather a proof of friendship; so we can lead the important proprietors of works in Dean Forest to reflect and see the necessity of being careful and wise in the regulation of prices to meet the state of the markets at any given period, and to adopt such cautious measures as will retain the trade in the district, we shall have accomplished a work of friendship to the entire population of the Forest. And, at the risk of being charged with presumption, we attach so much importance to measures of caution that we suggest for the consideration of the local proprietors in works whether it would not be better to feel their way with small advances in prices, when advances are deemed necessary, even of 3*d*. or 6*d*. per ton, rather than by shillings, as by such a course the pulse of the markets would be ascertained, especially in ticklish times, like a cautious man, and then moves with more confidence and certainty. So it is desirable that surrounding coal fields and their quotations should be studied as well as probable effects upon the public in any given action or change before a decision is come to, or the change may work disaster instead of securing an advantage. The importance of this will be manifest by considering that any change which checks or destroys trade de-



The CHAIRMAN said the next business was to consider the advisability



dividing the shares into 12,000, which seemed to be the wish of the shareholders, and to which the directors did not object.

Mr. SCHOFIELD moved—That the shares in this mine, after the 26 inst., be divided henceforth into 12,000, and that the pursuer be and is hereby authorised and required to make all such entries in the cost-book as may be necessary for carrying this resolution into effect. He said that amongst other advantages it would increase the facilities for buying and selling shares, and the market would not be so limited with a large number of shares as a small number.

The CHAIRMAN said he had stuck by the mine 20 years, and he hoped to live to see it the biggest mine in Devon or Cornwall.—Mr. SCHOFIELD: It is the biggest mine.

Mr. MACFARLANE seconded the resolution.

Mr. PARRY mentioned that since the last meeting no less than 600 transfers had passed through the office, representing 11,852 shares.

The resolution was then put and carried.

The CHAIRMAN then stated that a meeting would be held on the 26th inst. to confirm the resolution.

Some discussion, originated by Mr. CLIFF, ensued regarding the inspection of the mine, but in the end the almost unanimous feeling seemed to be that no alteration should be made in the present regulations regarding an inspection of the mine, which has hitherto worked well.

A vote of confidence was then passed to the family of the late Mr. Dawkes on the motion of Mr. SCHOFIELD, seconded by Mr. MACFARLANE.

A vote of thanks to the Chairman and directors closed the proceedings.

#### MORFA DU MINING COMPANY.

The third ordinary general meeting of shareholders was held yesterday at the offices, Finsbury Circus.

Mr. J. Y. WATSON, F.G.S., the chairman, presiding.

Mr. F. F. WILSON (the secretary) read the notice calling the meeting.

The CHAIRMAN said he did not know that he could add much to the information contained in the report and accounts. At the last meeting they were under contract for the supply of bluestone, and he then stated that if the contract were continued they would soon be in a position to pay a dividend. They sold and delivered 2000 tons, but the contract was not continued. They raised 500 tons more, and then stopped raising, but they had sunk a shaft to another level, and had cut the lode at that level richer than above, and were now in a position to return from 150 to 200 tons per month, as soon as a sale was obtained for it. As regarded the 500 tons, it was now under offer at a price, and it was to be decided whether that price was to be accepted or not. If they sold the 500 tons they would make a handsome profit. They were now driving under the white rock, where they hoped to get copper, but there were 7 or 8 fms. still to drive. In conclusion the Chairman moved the reception and adoption of the report and accounts.

Mr. WAGSTAFF seconded the resolution.

Capt. MITCHELL said that by continuing the bottom level where they intersected the bluestone lode was wider and richer than when he wrote his report on February 25. They had carried the lode nearly 5 ft. wide, and had not yet got the full width, and by the side of the lode they found some copper. He should think the bluestone now got would be worth 10 to 12 tons per fathom. As they worked the bluestone they would pick up some copper.

The CHAIRMAN said that considering the small amount of capital this was the cheapest mine he knew.

Capt. MITCHELL said he believed Morfa Du would make a splendid mine. It was a good mine now. The string of copper might go wider.

Mr. WILSON mentioned that the Mona Mine had had an offer for a large quantity of bluestone and was then put and carried.

The resolution for the adoption of the report and accounts was then put and carried.

On the motion of Mr. WILSON, seconded by Mr. STURGE, the retiring director, Mr. F. Braby, was re-elected.

Mr. F. BRABY, in acknowledging his re-election, referred to the advantage which the company possessed in having as a director Mr. J. Y. Watson, who was an excellent geologist. For himself he might say that he had analysed the ores, and the results of those analyses were very close to those which had been made by independent assays. The ore, which was of an oblique character, had to be sent to Liège to be treated. The bluestone was chiefly being worked for zinc, the lead, mercury, and antimony being of minor importance.

On the motion of Mr. STURGE, seconded by Mr. PAGE, the auditor, Mr. E. Ashmead, was re-appointed.

A vote of thanks to the Chairman and directors closed the proceedings.

#### PARYS COPPER CORPORATION.

The second ordinary general meeting of shareholders was held yesterday at the offices of the company, Finsbury Circus.

Mr. J. Y. WATSON, F.G.S., the Chairman, presiding.

The notice calling the meeting was read by Mr. F. F. WILSON, the secretary.

The report and accounts were taken as read.

The CHAIRMAN said—Capt. Mitchell tells us that the lode in the 90 cross-cut was now worth 3 tons per fathom, and not yet in the main lode. You will see reference in the report to boring machinery. If we had employed boring machinery before this we should have had 400 fms. of piping to put in, which would render it so expensive as to be no advantage. As soon as Colonel's shaft is ready for boring machinery it will be obtained. The great improvement here is the price of copper. We have very large reserves of poor ore, and if we had sold them in the last 12 months there would have been a certain loss, whereas we are now able to sell them at a profit. We have 280 tons now ready for sale, costing under 12. per ton to raise, and, therefore, if we get 22, we should make a good profit, and we can go on to raise from 100 to 200 tons a month. We have 2000 tons of ochre now drying on the mine, nearly all of which will be sold this summer. This is not shown in the accounts as an asset, although mentioned in the directors' report. We clear the pits once a year or so, and do it in the summer. There is a demand for the best at 2. a ton now. Capt. Mitchell is present to answer any questions respecting the state of the mine that you may ask him. The Chairman concluded by moving the adoption of the report and accounts.

Mr. WESSELLS seconded the resolution.

Mr. WAGSTAFF asked what was the value of the ochre?—The CHAIRMAN said 22. per ton for the best. We have about 2000 tons on hand. We sell a large quantity of native ochre, which we raise at 1s. or 1s. 6d. a ton, and it is largely used for paint and for fillers.

Mr. WAGSTAFF asked how the value of the ochre was arrived at?—The CHAIRMAN: We take it at the value at which we sell it every day.

Capt. MITCHELL, in reply to a question, said: We have two or three qualities, Nos. 1, 2, and 3. Our No. 1 is usually sold at 22. per ton, the No. 2 at 33s. to 35s., and the No. 3 at 15s. We have some native ochre which we sell as low as 11s. per ton, but sometimes we lixiviate it, and make 22. per ton. A large quantity is used in paper mills, and we have large orders coming in.

Mr. WAGSTAFF: Are there any indications that we are getting into the main lode?—The CHAIRMAN: Capt. Mitchell says it is still ahead.

Capt. MITCHELL: We have not arrived at the main lode yet, and we cannot tell how soon we shall reach it. It will greatly depend upon the dip of the lode. We expected to have met with the main lode a long time ago. We based our calculations upon the shallow workings, and when we have come in underneath that we have found the whole mass dipping vertically instead of underlying 2 or 3 ft. The richest deposits of copper ore were always found in the shale.

The SECRETARY said they cut a lode a little while ago worth 3 tons a fathom, which gave out. Now they had reached one which he believed to be an east and west lode, which was worth 3 tons of copper and 2 tons of sulphur to the fathom. If that were the case, it was a very remarkable confirmation of their hopes that they would cut something good there, because these were distinct things, whilst the main lode was undoubtedly yet before them.

Capt. MITCHELL: If the lode is absolutely vertical, we shall have 15 or 20 fms. to drive, and at the present time we are driving from 2 to 2½ fms. per month with a full pair of men.

The CHAIRMAN: Could you get on faster with boring machinery?—Capt. MITCHELL: It is very doubtful. When we get Colonel's shaft through we shall be able to work it better than if we had put it up earlier. I firmly believe that there is an immense quantity of copper underneath the open-cut. My own feeling is as sanguine as ever. There is a vast quantity of unexplored ground. Although the property has been worked over 100 yards, not a third part of the property has been worked.

The CHAIRMAN said the ore in the Carreg-y-Doll was not so rich, but it was larger in quantity, and they were selling a great deal from this.

Mr. MASKELL asked whether the Parys Copper Corporation was paying its way?—Mr. WILSON (director) said not at present, because the deadwork being done on the cross-cut absorbed so much. If they stopped the cross-cut they could pay expenses. The loss was much less than it had been.

The CHAIRMAN said they sold 550 tons of precipitate every quarter, and the ochre usually about once a year. They could increase the returns of copper if the price went up.

Capt. MITCHELL, in answer to a shareholder, said the copper they were now getting was not quite so good as they were getting some time ago, but it was better than that from the Carreg-y-Doll lode.

The SECRETARY said that one important point was that beneath the under-cut Capt. Mitchell came upon a caunter lode; but as it was not good for copper ore, and pinched up, he did not follow it through, but he had now come upon what was believed to be another lode, which was a very important point.

Mr. FRED. BRABY (a director) drew attention to the fact that although there had been a considerable increase in the price of copper, yet the price was still considerably under the average value, and, therefore, he hoped to see a much better price for copper.

The CHAIRMAN said the present price of the unit was 13s. 0½d., and Capt. Mitchell had stated that if it went to 15s. he could make the copper in these mines pay.

After some further conversation of an unimportant character, the resolution for the adoption of the report and accounts was put to the meeting and carried.

On the motion of Mr. WAGSTAFF, seconded by Mr. STURGE, the auditor, Mr. Edward Ashmead, was re-appointed. The meeting then broke up.

LEVANT.—At the meeting, on Tuesday (Mr. J. B. Coulson in the chair), the accounts showed a profit of 657l. on the 16 weeks to Jan. 10. The tin sold, 75½ tons, realised 4074l.; copper, 145½ tons, 1252l. It was stated that all the relinquished shares are now taken up, and it is estimated that when these are paid for there will be a balance of 1394l. in favour of the adventurer. With this balance they will, it is said, be able to commence driving by boring machinery, which is expected to lay open considerable resources. The pursuer (Captain R. White) stated that in their last account they had not had the full benefit of the increased price of tin; but at next account there might be a dividend. The agents' report referred particularly to the piece

of unwrought ground in the eastern part of the mine as being worthy of immediate development. Capt. Trezise stated that the prospects of the mine are more encouraging than for a considerable time. Mr. R. Boyns believed Levant to have a greater number of promising points than any mine in the parish. The chairman reiterated his belief that Levant is yet in her infancy, although she has paid 200,000l. in dividends.

PHENIX UNITED MINES.—At the general meeting at Tywardreath on Thursday the accounts showed a profit on the 16 weeks working of 3515l. 16s. 6d. The old balance against the mine was cleared off, and a dividend of 1500l. (2s. 6d. per share) declared. The agents' report was considered excellent, and the returns are now 50 tons of tin per month. A detailed report of the proceedings will be published in next week's Journal.

LAST CHANCE SILVER MINING COMPANY.—An extraordinary general meeting of shareholders was called for Thursday last to confirm the special resolution passed on Feb. 26 last for the reconstruction of the company, but the business could not be proceeded with owing to a sufficient number of shareholders not being present to form a quorum. Another meeting will accordingly be held on Monday, March 22, at 2 o'clock.

### Registration of New Companies.

The following joint-stock companies have been duly registered:—

THE CANADA MORTGAGE AGENCY (Limited).—Capital 50,000l., in shares of 5l. To take over the business of the Colonial Trust Corporation (Limited). The subscribers are—T. Hughes, Q.C., 80, Park-street, 100; G. Banbury, 3, Craven Hill, 100; J. C. Salt, 73, Lombard-street, 100; W. M. Wilkinson, 44, Lincoln's Inn, 1; F. Gruder, 38, Blomfield-road, 1; C. M. Kemps, 8, Walbrook, 1; J. W. Ford, 8, Walbrook, 1.

NICHOLLS, HAYNES AND COMPANY (Limited).—Capital 50,000l., in shares of 100l. To purchase and carry on a business of engineers and tramway constructors in Westminster. The subscribers (who take one share each) are—S. Nicholson, 41 and 42, Parliament-street; H. T. Smith, Croydon; G. Haynes, 41 and 42, Parliament-street; H. Haynes, 41 and 42, Parliament-street; J. G. Mincham, 123, Moorgate-street; W. Haynes, 123 and 124, Moorgate-street; R. Lodge, Ilford.

WILLIAM CAXTON AND COMPANY (Limited).—Capital 20,000l., in shares of 5l. To carry on the business of printers, stationers, publishers, &c. The subscribers (who take one share each) are—W. Green, 57, Gracechurch-street; C. McDonald, Hampstead; A. Hall, 107, Ladbrooke-road; W. H. Baldwin, Kennington; J. F. Boulton, 2, Dowgate Hill; A. W. Maberley, Exeter Hall; W. Hazell, 2, Dowgate Hill.

THE MARGATE AND RAMSGATE EXCURSION AND TUG FLEET COMPANY (Limited).—Capital 50,000l., in shares of 1l. To carry on the business of steam-boat and tug owners, caterers, &c. The subscribers are—W. H. Scott, 54, Windsor-road, 25; G. Griffiths, Brixton, 10; W. Brannen, Brockley, 25; T. Semper, 14, Queen Victoria-street, 15; C. Tyler, Lambeth, 30; R. H. Dixon, Battersea, 50; J. B. A. Du Santor, Chiswick, 25.

HENRY BENTLEY AND COMPANY (Limited).—Capital 250,000l., in shares of 20l. To acquire of T. and H. Bentley their business of brewers, wine and spirit merchants, at Oulton, Yorkshire, and to carry on the same. The subscribers are—J. Charlesworth, Wakefield, 100; C. E. Charlesworth, Wakefield, 750; F. E. Hunter, Bath, 100; C. Woodlton, 88, Borough, 250; T. W. H. White, Woodlesford, 100; C. F. Hoyle, Woodlesford, 100; C. H. Hinde, Altrincham, 5.

THE NEW GROSVENOR COLLIERY COMPANY (Limited).—Capital 5000l., in shares of 10l., with power to increase the same. The purchasing or otherwise acquiring of coal mines, iron, and any other mines, mining ground, or minerals, and particularly the coal and ironstone mines situate in the township of Coed Poeth, Denbigh, in lease to J. Brewin, but now contracted to be sold. The searching for, making merchantable, and disposing by sale of coal, ironstone, and all ores, metals, and metallic minerals, and to carry on the business of miners, smelters, engineers, ironmasters, ironfounders, and general contractors in all its branches. The subscribers (who take one share each) are—J. Simpson, Frodsham, merchant; G. L. Davies, Liverpool, merchant; J. C. Morrell, Leyland, C.E.; W. Wrennall, Liverpool, land agent; T. Davies, Manchester, coal merchant; W. W. Tomlins, Manchester, accountant; J. W. Lowe, Manchester, barrister-at-law.

THE UPPER WIDNES CHEMICAL COMPANY (Limited).—Capital 50,000l., in shares of 10l. To purchase, manufacture, deal, and sell chemicals. The subscribers (who take one share each) are—J. W. Carille, Widnes; J. W. Baring, Widnes; J. Matthews, Widnes; S. Palin, Widnes; J. Clave, Widnes; J. Makin, Liverpool; W. J. Wareing, Widnes.

THE HOOTON MANURE COMPANY (Limited).—Capital 5000l., in shares of 5l. each. The purchase, manufacture, and sale of artificial manures. The subscribers (who take one share each) are—E. Evans, Oswestry; W. Webb, Brimstage; A. A. C. Maxwell, Birkenhead; J. Tonge, Thornton Hough; W. Allenby, Chester; R. Anderson, Brimstage; W. Gorst, Kington.

THE SOLID NUT COMPANY (Limited).—Capital 20,000l., in shares of 100l. To purchase a certain patent and carry on the trade of nut and bolt makers, &c. The subscribers (who take one share each) are—J. Needham, Salford; J. W. Newall, Salford; W. Hodgson, Salford; C. Hodgson, Moston; C. G. Hill, Nottingham; H. Allport, Nottingham; C. J. Allport, 11, Queen Victoria-street.

H. P. TRUEFITT (Limited).—Capital 75,000l., in shares of 10l. To carry on an old established business of hairdressers, &c. The subscribers (who take one share each) are—Viscount Pollington, 9, John-street; Lord Greenock, Thirsk; Hon. T. Cochrane, 12, Queen's Gate; W. W. Knollys, 102, Belgrave-road; H. P. Truefitt, 13, Old Bond-street; R. R. Edward, Tottenham; W. H. Mollindina, Notting Hill.

THE GENERAL FIREWOOD COMPANY (Limited).—Capital 8035l., in shares of 5l. To manufacture in conjunction with certain patents firewood for sale. The subscribers (who take one share each) are—B. C. Evers, 186, Lambeth-road; A. Grant, 5, Lothbury; H. Wickens, 145, Palmerston Buildings; R. Evers, 186, Lambeth-road; J. Davies, 21, Finsbury Park; T. Sissons, East Dulwich; E. M. Pigram, 30, Upper Tollymore Park.

THE FOOD REFORM RESTAURANT COMPANY (Limited).—Capital 5000l., in shares of 1l. To establish and maintain in and out of London restaurants. The subscribers are—F. P. Tunes, 4, Market-street, 40; F. E. Walker, Chelsea, 10; F. Podmore, 15, Hart-street, 5; W. Gilchrist, 4, Birchmore-terrace, 5; H. Manning, 228, Kingsland-road, 5; H. J. Gandy, 8, Harrow-road, 10; D. G. Paine, 23, Adelaide-road, 10; M. Nunn, 4, Carlisle-street, 1.

THE PENNOLL TIN SMELTING COMPANY (Limited).—Capital 10,000l., in shares of 10l. To carry on the business of smelting in all its branches. The subscribers (who take one share each) are—A. H. Strauss, 16, Rood-lane; A. Shanes, 16, Rood-lane; L. T. Pfister, 16, Rood-lane; E. H. Sharpe, 16, Rood-lane; F. Holford, 16, Rood-lane; J. Hoffman, 16, Rood-lane; W. Teague, Truro; T. Teague, Truro.

A. S. SHAW AND COMPANY (Limited).—Capital 6000l., in shares of 1l. To carry on the business of coal, lime, and mineral merchant at Halifax. The subscribers are—A. S. Shaw, Halifax, 1400; H. Shaw, Halifax, 20; G. Lawton, Halifax, 20; J. S. McKnight, Halifax, 20; J. McKnight, Halifax, 5; J. Mackerell, Halifax, 5; J. T. Riley, Halifax, 5.

THE SILVERLODE LEAD MINING COMPANY (Limited).—Capital 40,000l., in shares of 2l. To acquire the right by purchase or otherwise of working certain mining lands situate at Shaller, county of Tipperary, or any other mining property in Ireland. To purchase, erect, and maintain any machinery, plant, and appliances necessary for developing said mines. To crush, dress, and prepare the ores for the purpose of sale, and to carry on the business of miners and smelters in all its branches. The subscribers (who take one share each) are—W. Fortescue, Carlingford, retired Major; E. E. Holt, Shepherd's Bush, accountant; P. Tarbutt, 15, Horbury-crescent, C.E.; J. Andrew, Tollymore Park, accountant; E. M. Pigram, 30, Tollymore Park, law stationer; T. Sissons, East Dulwich, bookkeeper;

A. Aylard, Little Ilford, bookkeeper. Each director must qualify in 25 shares, remuneration being 100l. per annum.

GIFFARD REFRIGERATION COMPANY (Limited).—Capital 10,000l., in shares of 50l. To acquire and work certain patents for the artificial production of cold. The subscribers (who take ten shares each) are—A. C. Mackey, Lyndhurst; A. D. Mackay, 107, Victoria-street; R. B. Ronald, 27, Pembroke-square; R. H. Caird, 123, Bishopsgate-street; T. Russell, Sussex; R. Gibbs, 14, Holland Park; J. Morrison, Bedford.

FOWLER AND MCCOLLIN (Limited).—Capital 50,000l., in shares of 10l. To carry on the business of engineers, machine and agricultural implement makers at Hull. The subscribers are—H. Sleight, Hull, 2; C. E. Hewitt, Hull, 1; E. Robson, Hull, 2; T. Fawcett, Hull, 2; R. L. Brooks, Hull, 2; W. F. Sleight, Hull, 1; W. Stainton, Hull, 2.

THE BRITISH AND IRISH PLATE GLASS INSURANCE COMPANY (Limited).—Capital 25,000l., in shares of 5l. To insure against damage by accident or otherwise. The subscribers (who take 125 shares each) are—H. Thomas, Bristol; G. K. Morgan, Clifton; C. Thomas, Stoke Bishop; F. F. Fox, Clifton; H. L. Bixley, Bristol; J. W. Hall, Clifton; C. R. Hancock, Bristol; C. E. Ware, Exeter.

GOLD COAST MINING COMPANY (Limited).—Capital 65,000l., in shares of 1l. To purchase or otherwise acquire and work the lands, hereditaments, mines, minerals, veins, lodes, deposits, mining rights, &c., of the property known as Abbottsuyakoon, Wassan district, near to the port of Axim, West Coast of Africa. To acquire and work any other lands and properties, and erect furnaces, mills, or other appliances for the purposes of smelting, crushing, refining, and dressing the ores and minerals of the company or of any other, and also to carry on the business of general agents and merchants. The subscribers (who take one share each) are—F. Fitzgerald, 121, Fleet-street, newspaper proprietor; J. Lord, 6, Hotham-road, accountant; T. E. Briggs, West Ham, secretary to a public company; A. E. Walton, Hendon, accountant; W. F. Day, 79, St. Mark's-square, accountant; W. Summins, 40, Milkwood-road, accountant; A. C. Briggs, 169, Adelaide-road, colliery proprietor.

### FOREIGN MINING AND METALLURGY.

Coal has shown some little weakness in Belgium. In the Hainaut prices have remained very firm, but the Liège basin has shown a slightly downward tendency. Some collieries have even reduced their rates 10d. per ton. Complaints continue to be made of the inadequate supply of rolling stock upon the Belgian railways. Colliery proprietors can obtain only about half the trucks which they require. It appears that Belgium imported 90,263 tons of coal and 1477 tons of coke in January, while she exported in the same month 399,287 tons of coal and 60,922 tons of coke. The corresponding exports in January, 1879, were 365,446 tons of coal and 44,509 tons of coke.

The Belgian iron trade has been weak as regards iron and pig. Steel has, however, been firm. Contracts for pig have been concluded in the Liège basin at 4l. per ton. Complaints continue to be made of the scarcity of rolling stock upon the Belgian State Railways, but it should be remarked in fairness that while there were 16,381 trucks upon the system in 1873, the corresponding total had been carried in 1878 to 22,418. At the close of 1879 the total had been further carried to 23,453, so that the Administration of the Belgian State system has certainly made considerable efforts to keep pace with the requirements of the traffic. It appears that Belgium imported 16,381 tons of rough pig and 1321 tons of old iron in January, 1880. The importations of minerals into Belgium in January amounted to 49,320 tons, as compared with 54,740 tons in January, 1879. The exports of minerals and limailles from Belgium in January were 20,384 tons, as compared with 19,847 tons in January, 1879. Rails were exported from Belgium in January this year to the extent of 1759 tons, as compared with 2650 tons in January, 1879; and plates to the extent of 1944 tons, as compared with 1133 tons.

The bulletin of the Committee of French Foremasters publishes an estimate of the probable production of pig, iron, and steel in France in 1880. This estimate comes out as follows:—Pig, 1,344,759 tons; iron, 838,706 tons; and steel, 339,410 tons. The actual production of 1879 was:—Pig, 1,477,073 tons; iron, 768,335 tons; and steel, 281,800 tons. The production of rails figures in last year's return for 247,247 tons of steel rails, and only 43,023 tons of iron rails. French railways consumed almost the whole of the steel rails made in France last year, their consumption having amounted to 29,232 tons of iron rails, and 196,240 tons of steel rails. The corresponding consumption for 1880 is estimated as follows:—Iron rails, 27,605 tons; steel rails, 202,435 tons. The revival in the French iron trade has naturally induced a re-lighting of several furnaces in the Champagne group. The Terre-Noire Company has just concluded a contract for 60,000 tons of steel rails, to be delivered in 1880, 1881, 1882, and 1883, at 8l. 8s. per ton. The rails are to be supplied to the General Union Company, and they are to be laid down on sundry lines in Italy and Brazil. The Chatillon and Commentry Company has obtained a contract for 2850 tons of double-headed steel rails, at 11l. 0s. 10d. per ton. The difference in the prices at which these two contracts were taken has excited great and general remark. The Northern of France Railway Company has decided on ordering 2000 trucks. The basis price of merchants' iron in the Nord and the Ardennes is now 9l. 12s. per ton, with a scale of 8s. per ton per class. In the Meurthe-et-Moselle the corresponding price in the case of important transactions is also 9l. 12s. per ton. Coke-made pig is quoted in the Meurthe at 4l. 8s. per ton, while charcoal-made pig has brought 5l. 12s. to 6l. per ton in the Haute-Marne. From Alsace and Lorraine we learn the Wendel Works have taken a steel rail contract, amounting to no less than 80,000 tons. The delivery of these rails is to be spread over a term of three years.

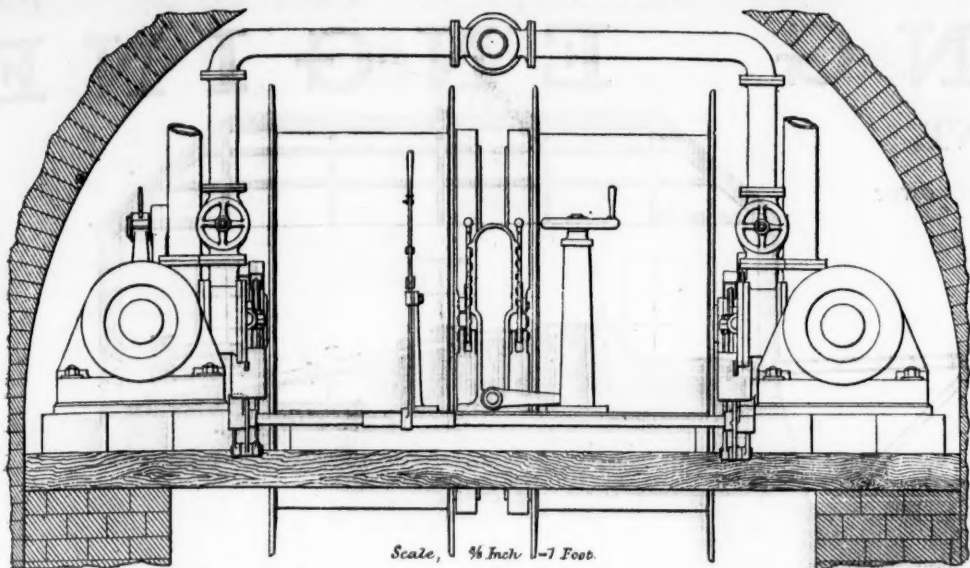
The declining tendency of prices in the continental coal markets indicated in the reports quoted a week ago appears to have since made further progress, according to the advices now to hand. In Belgium a reduction of prices has been made in the Liège district. The statistics of the Belgium coal trade for the month of January, recently published, show a considerable expansion in both the imports and exports; the former amounted to 90,263 tons of coal and 1477 tons of coke, against 58,978 tons and 950 tons respectively in January, 1879; and the latter to 399,287 tons coal, and 60,922 tons of coke, against 365,466 tons coal and 44,509 tons of coke last year. In the German markets the weakness has been so far apparent rather in regard to house coals than industrial descriptions; the coal quotations on the Dusseldorf Exchange, however, now show a general decline against last month's prices, and as there has been a large increase in the number of coke ovens at work, coke has also been offered by some producers at lower rates than were lately quoted. The carrying out of the resolution to reduce the output of coal in Westphalia tends, however to steady the German market. It is stated that a considerable number of men will be thrown out of employment by this action. Meanwhile in some recent competitors for supplying German war vessels the Silesian coalowners have been beaten by English tenders, which distanced the German quotations by nearly 25 per cent. In Austria also prices are less firm than they have been, and a reduction has been made in the Vienna market. In the United States the stock has been materially lessened, and a very determined combined effort to force prices up is being made. A decline of coal prices on this side the Atlantic, and an upward movement in America, will of course be an advantage to English and European manufacturers in their competition with the protected industries of the Union.

DIAMONDS.—While it is acknowledged that Mr. J. B. Hannay has succeeded in producing diamonds the cost of the artificial over the natural gem is some 2000 per cent.

HOLLOWAY'S PILLS AND OINTMENT.—The great variations of temperature, the fog and the foul vapours which permeate the atmosphere, try the respiratory organs terribly; hence arise hoarseness, quinsies, loss of voice, bronchitis, and the whole train of endless variety of throat and chest affections which now prevail. Neglect of these in their early stages is almost criminal, as many a life might be saved through early and prompt treatment by means of Holloway's well known remedies. This treatment can be readily and easily carried out, and soon disposes of the attack in a most satisfactory manner, by restoring the balance between the circulation and respiration, by lessening the inflammation, abating the febrile symptoms, and by soothing the irritability of the nerves.



## MINING MACHINERY.



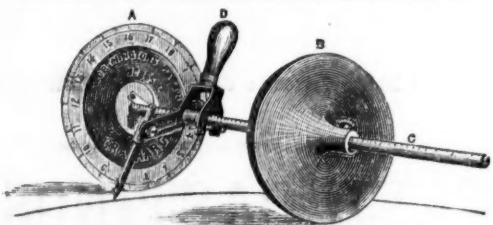
## MINING MACHINERY.

The illustrated catalogue of Mining Machinery and Appliances manufactured at the Broad Oaks Ironworks, Chesterfield, has just been published through E. and F. N. Spon, of Charing Cross, and is likely to prove very useful to directors and engineers of mining companies about to provide their mines with plant. Winding machinery, hauling engines, pit head gear, tipplers, ventilating fans, pumping engines, steam-engines, boilers, hydraulic lifts and hoists, rock boring machinery, quarrying and coal cutting machinery, coal washing machine, stampers, wagons, and miscellaneous castings are arranged under separate heads, which much facilitates reference.

As a sample of the character of illustration and information given, the reference to improved hauling engines, which is represented in the above engraving, is subjoined. The engraving shows an end elevation of a pair of underground hauling engines. These are designed with a view of being easily dealt with in fixing underground; all parts are of a strong and substantial description, and the drums are made loose on the shaft, and worked by a clutch in the centre. There are two cylinders with cranks set at right angles, slide valves being employed worked by eccentrics. The brake lever and hand wheels are well under the control of the attendant.

Amongst the various other illustrations is one showing Schram's improved carriage support for rock drills. The carriage is shown with four rock-boring machines fixed for simultaneous boring. This construction of support is used for driving where the greatest speed obtainable is a primary consideration. As will be seen from the illustration, the carriage is so constructed that the wagons can be run right through it. The stretchers are sometimes made with flat screws running along their whole length, by means of large nuts made with handles the rock-boring machines are raised to the required height, and strong universal clamps enable them to be easily fixed in any desired angle. One man can in a few minutes fix the machine in the position required. The advantages of this arrangement are—Points are dispensed with; the boring may commence before all the debris is removed; as the whole is movable on wheels the drills and the hose need not be disconnected, whereby a great saving in time is obtained in fixing and removing the machinery. It is an argument in favour of some heavy rock-boring machines that they are fixed at two points, but this mode of construction, which can easily be applied to any rock-drill, involves an unnecessary complication, the result of which is great loss of time. The Schram drill is short and very handy, and by using the supports constructed for it sufficient stability is obtained. The whole mechanism is, in addition, simple, strong, and easily fixed.

## THE GRAPHARC—NEW DRAWING INSTRUMENT.



The practical impossibility of quickly delineating on an ordinary drawing board a curve corresponding to the arc of a circle of 10 ft. or 20 ft. radius is but too well known to engineers, surveyors, and others, so that the advantage of Mr. Worthington's grapharc, by the use of which the arc of any circle can be obtained without any visible centre being required, will be generally appreciated. The subjoined diagram represents an ordinary instrument, which consists of two wheels mounted on graduated axis, with handle, marker-holder, &c., and capable of describing circles or arcs of any radius from 4 ft. to 20 ft., but to order they will be supplied to describe arcs from 1 1/2 ft. to 8 ft., or any other radius up to 100 ft., taking one-fifth of the maximum range of the instrument as its minimum range. For instance, if an instrument is wanted to describe a maximum radius of 50 ft., then the least radius it will describe will be 10 ft., or if 30 ft. the maximum then 6 ft. the minimum, and so on.

For all required circles or arcs the radius or distance from centre will be known in figures—for instance, if it is desired to make a "centre" for an arch of 15 ft. 6 in. radius, or to get the full sized curve of such an arch, or any portion of it—set the lesser wheel, marked B at the 15 ft. graduation on axis, and make fast by the set screw; now correctly set and make fast the larger wheel at the first graduation or 0 on axis. Adjust and fix the handle bush at such a distance from the larger wheel that the pencil or marker will mark just 6 in. inside the course run by the larger wheel. Now place the instrument on the surface to be marked, and draw it along by means of the handle, at the same time keeping the pencil or marker steadily on the surface to be marked; the line now given will be the curve of 15 ft. 6 in. radius. The reason why the lesser wheel should be set a graduation further on axis than the radius required is simply for the purpose

of putting more equal pressure on the wheels, as the handle is then nearer the centre between them. To measure the length of the arc it is required simply to note the figures on the margin of the larger wheel at commencing, and note the number of revolutions the wheel makes in describing the curve. The direction of the radial or mitre lines may be ticked off at any part of the curve when the ends or diameter lines on wheels touch the drawing surface; this will be every half revolution—i.e., every 9 in. on the curve.

## FOREIGN MINES.

**FRONTINO AND BOLIVIA.**—The statement of profit and loss for the month ending Dec. 20 shows a profit of 5241. In addition to the cost of 24161, the sum of 5411 was spent on capital account, and 2401 for freight and charges on machinery at Medellin.

**ANTIOQUIA (Frontino).**—The statement of profit and loss for the month of December shows a loss of 1141. 14s. Extra cost, 201. The agent reports that the Carmen Mine is in a very promising state, and that the 13 shaft has greatly improved, there being 3 ft. of mineral in the floor of the level in the end of first-rate quality. He adds that the mine, with the proposed new adit, would be a splendid one.

**BLUE TENT.**—G. S. Powers, Feb. 7: You will notice by this report that we only run 24 hours during the week, the water having failed entirely in the south Yuba Canal. The powder drift in the Blue Lead was fired last Tuesday morning, Feb. 3, from which we received good results. We shall fire another drift in the South Yuba the first of this week, and with a good supply of water shall look for favourable results.

**ISABELLE (Gold and Silver).**—Foreman's report for week ending Feb. 8: Advance made during the week 54 ft.; total distance from mouth, 1762 ft.; total distance from Monument, 1534 ft. The Monument was placed at the point where we first broke ground, and is 72 ft. from the first set of tunnel timbers. The formation has been very hard drilling, but blasts well, allowing me to increase the depths of the holes with satisfactory results. The machinery is in perfect order, and all departments working harmoniously.

—Extract from manager's letter of Feb. 16:—I wrote you last on the 9th inst., and now send you foreman's report and progress return for last week. In that letter I stated that as the new hands got on with their work our rate of driving would improve. Last week, therefore, we made 61 ft., the best running since we started. On Saturday I sent for the first load of 13-inch air-pipe, which ought to arrive to-day, unless the snow that fell last night prevents. The drill carriage fittings and car wheels are not yet shipped, but will be in the course of the week. By last mail I heard from Laffin and Rand, New York, the makers of the magneto-electric battery and electric fuses used by Mr. Sutro, that they would ship mine on Monday last. The two additional drills I got in San Francisco are at the works. As my foreman says, the drill carriage, so far as we can go until the castings arrive, are completed. I enclose rough sketch of the carriage, which I have made after the most improved designs at less than one-third of the cost charged by the manufacturers.

Foreman's report for week ending Feb. 14: Advance made during the week 61 ft. Total distance from mouth 1823 ft.; total distance from mouth 1895 ft. The formation continues favourable for breaking ground. The drill carriage is completed and waiting for the castings. Machinery all in perfect order, and everything running smoothly.

**OREGON.**—F. Ennis, Feb. 7: The water season commenced at the company's mines on Dec. 1, and although we have had some very heavy snowstorm, as well as extremely cold weather, we have washed steadily at some of the claims since that date. At one time the snow was 4 ft. deep on the line of ditch, with the mercury 6° below zero. There has been quite a number of slides on the ditch, and a considerable amount of rock thrown in from the upper bank by the action of the heavy frost, but no break to date. The slides were nearly all above Quartz Creek, and that stream has afforded at least a small head of water while they were being shovelled out. One of the new claims fitted up last fall (the Steel) has paid \$75 per day of 24 hours for the washing done in opening, which I consider very good. The gold here is different from that found at the other claims, being quite fine, with no coarse pieces at all. The bed-rock also differs, being granite, while we have slate at all other claims. The Effenger claim has not paid labour expenses for opening, but I hope for better results in the future, as the last few days' washing was done through a side cut, which showed well in heavy gold, while the main cut through which nearly all the run was made did not show a colour of gold; this leads me to believe we are on the edge of pay gravel. There has been a large amount of ground washed at the Reed claim down to within 3 or 4 ft. of the bed-rock, that depth of gravel being left to confine the water to the ground sluices. As we have but little grade in the rock, and the claim being nearly worked out, I thought it better to leave gravel in the bottom than to go back and blast down a long rock-cut; when the upper portion of the bank is washed away the bottom we are now leaving will be driven in. The clean up will be light until the bottom gravel is washed, as the gold is all on or near the bed-rock. The clean up for all washing done up to the 1st inst. was 137 1/2 ozs. of gold, which will mint about \$2350. Of this amount \$1150 was taken at the Reed, \$300 at the Effenger, and \$900 at Steel. The cost sheets for the two months amount to \$2716 43, showing a loss of \$386 43, which is accounted for by leaving bottom gravel at Reed claim. When I left the mines there was about 750 lb. of water in the ditch, and as the weather has been clear and cold since, I doubt if there is that amount now. Hoping the Steel claim will continue as it has commenced, and that the Effenger will improve, as it gives promise of doing.

**VIRNEBERG.**—R. K. Roskilly, March 3: Setting Report: We set the following bargains on the 2nd inst.:—Hadley engine-shaft, to sink below the 140 metre level, to nine men, at 150 marks per metre; the ground here is still soft, and in consequence we are compelled to put a more timber than in the upper part of the shaft; thus our progress in sinking for the present is a little impeded. As soon, however, as the shaft is deep enough for pump we shall at once commence to cut flat at the 160, and when it is completed we shall drive to cut the lode. This is an important feature, and judging from the nature of the rock in the bottom, a good course of ore may be reasonably expected. The 140 metre level to drive north of cross-cut (south of engine-shaft), to two men, at 45 marks per metre; the lode in the end is very large, composed principally of quartz, and yielding good stones of copper ore—a promising lode. To rise in the back of the 140 metre level to four men, at 20 marks per metre; the lode is a little improved, and worth 131. per fathom. To stop the back of this level, north of cross-cut, south of shaft, to six men, at 18 marks per metre; the lode has fallen off a little in value, and is only worth 107. per fathom. To stop in the back of the 140, north of rise, to six men, at 17 marks per metre; lode worth 157. per fathom. To stop the back of ditto, south of rise, to six men, at 15 marks per metre; lode worth 101. per fathom. The 120 metre level to drive north of engine-shaft to six men, at 35 marks per metre; the lode in the end is strong and masterly, and is improved in appearance and character, producing good stones of copper ore. The lode in the slope in the back of this level is improved, and worth 87. per fathom; set to four men, at 15 marks per metre. To drive the 120 metre level cross-cut, west of level and south of shaft, to two men, at 30 marks per metre. The object of driving this cross-cut is to endeavour to intersect the main part of the lode, which, looking at the bearing of the strata at this point, we are led to believe

standing in this direction. No 1 slope in back of the 120 metre level, south of shaft, to eight men, at 20 marks per metre; lode worth 101. per fathom. No. 2 slope in back of ditto to eight men, at 15 marks per metre; lode worth 201. per fathom. No. 3 slope in back of ditto to six men, at 18 marks per metre; lode worth 157. per fathom. To stop the back of this level on footwall of lode to four men, at 20 marks per metre; the lode is improved, and worth 87. per fathom. The 100 metre level, to drive north of shaft, to six men, at 30 marks per metre; in this end we have met with a slide which has dislocated the lode; but judging from its favourable character directly up to the slide, we anticipate, on its intersection again, that it will be found productive. To stop the back of this level to six men, at 30 marks per metre; lode worth 87. per fathom for copper ore. To stop the back of the 90 metre level, to two men, at 15 marks per metre; lode a little improved, and worth 61. per fathom. We have set the stone-breaker to work, and I am pleased to state that it is working most satisfactorily. The Rheingraben Elmschacht, loaded with 5200 centners, or about 300 tons of good percentage copper ore, will leave Mühlenweg for Rotterdam to-morrow morning. We are getting on very well in the dressing department, and good progress is being made towards another shipment.

**Erratum.**—In last week's report the return for the previous week was stated as 23 tons; it should have been 27 1/4 tons.

**COLOMBIAN HYDRAULIC.**—W. S. Welton, Jan. 19: Malpas: Run No. 65, from Dec. 19 to Jan. 18, during which time washing was carried on for 407 hours, has cost \$1346 1/4. The cost for the same period was \$1917, including \$149 20 spent on the new opening. The produce for this run has been less than for the last run, on account of our having to cut through a very thick sand streak, from 6 to 7 ft. thick, lying above the bed-rock gravel, and at the level of the sluice, in order to bring the sluice in straight, and to avoid a high piece of hard bed-rock and boulders to our left. Much time was occupied in running off the picked up sand streak, and this, of course, reduced the average produce per hour run. We have now nearly reached the rich gravel with the cut, and the returns for run No. 66 will be better. Up to date 200 ft. of sluice has been got in at the new opening, and our rate of advance appears to be about 40 ft. per week.—Malpas: Run No. 32, from Dec. 16 to Jan. 15, during which time washing was carried on for 440 hours, has produced \$967 17, which together with \$125 25 obtained from the old sluice, brings the remittance up to \$1092 42, and the total cost at the mine for the same period was \$722 87. The undercurrent produced 14 7/3 per cent. of the produce from the sluice, which appears to me to be a very satisfactory result, as without this appliance 5111 20 would have been lost in the tailings. I can only account for the returns having been larger during the first run from the new point, from the fact that there was no pipe-clay there, and although there was a very large quantity of tailings the space of bed-rock cleared of dirt and tailings was very much larger than we have since been able to uncover during any single run. When operations were commenced we went in upon rising bed-rock; this is now dipping again, and obliges us to spend much time in blasting down the bottom of the cuts.

**UNITED MEXICAN.**—Advices from Mr. Edmund Hay, dated Guanajuato, Jan. 26: Mine of San Cayetano de la Ovejera: In San Lazaro cross-cut the also a strip of quartz traversing the working runs in the direction of our advance, and consequently we kept it in sight. There is no other change in the work of the buscones than that the value of ore the thrown down by them has increased a little, particularly in three workings in San Pablo, one end to the west, to the echado (dip of the lode) of Santa Margarita, from which the week before last we had two classes of 51 and 10 marks respectively, last week 31, 8, and 5 marks; this strip of ore must soon come to an end, because it goes towards the pozo de guila, where no ore is to be seen. Another frente to the east, from which the week of 48-95 and 5-30 marks has been extracted last week, is a little above the point where the sinking of the pozo de San Pablo was changed to a cross-cut to the bajo, the work being carried on to the echado of said pozo. The third is a winze between San Pablo and San Antonio, from which on Jan. 17 some ore of 7 marks was extracted, and last week the assays were 49-95 marks. As this winze is on the echado it will communicate with the second working, the ore of which assayed 48-9 and 5 marks. This second working is of more importance than any other, because its level carried on to the east will pass below the bottom of the pozo de guila, and therefore will reach an inexhaustible source for exploration, while the other two must finish sooner or later, as the workings opened to west of San Pablo will communicate with the pozo de guila and the others going to the east with that of San Antonio. In the second frente of San Antonio, where the lode we have followed since the beginning decreased in breadth to 10 centimetres; we left to the alto this lode or costra, and having traversed the blandura (soft ground) diagonally we found a wall, the blandura finished and behind the reliz a lode on which we have worked the whole of last week. We continued the diagonal advance, and drove a cross-cut straight through the reliz ought to be. As soon as this wall is discovered we will resume our advance on the lode; until now we have only found pyrites of iron and bronze.—Mine of San Antonio de la Ovejera: In the work to communicate the Ave Maria with San Antonio we have traversed several relizes parallel to the lode, from which water filtrates abundantly.

**PESTARENA UNITED (Gold).**—March 2: Pestarena District—110 fm. Level: The end driving north is not yielding much ore just now, but promises early improvement. The end south produces 3 1/2 tons per fathom, and yields 13 dwts. per ton, and has a small lode which gives signs of enlargement within a short distance. The 100 driving north shows poor and unproductive, the ore branch lately seen having cut out. The 80 rise in the back north produces 7 tons per fathom, and yields 24 dwts. per ton, and has a stiff quartz lode that improves in going up. The 55 end driving north is in a small unproductive lode, but as water is appearing an improvement may be near. The 55 winze sinking north produces 12 tons per fathom, and yields 30 dwts. per ton, and the lode maintains its size but has less pyrites. The 33 end driving north is more promising than for some time past. The men are driving at a small distance from the level. No. 5 lode in the 33 end driving north has a small unproductive lode at present. The 65 end, driving north, produces 4 1/2 tons per fathom, yields 20 dwts. per ton, and shows most promising, having a good branch of quartz in easy ground, with walls of brilliant slicken slide. The 65 end, driving south, produces 4 tons per fathom, yields 16 dwts. per ton, and has drusy quartz in promising ground. The men from the three bottom ends are now engaged in arranging the shaft for double-hauling road, which will take about 15 days. This will not interfere with production. The ore mined for the past month was 132 7/5 metric tons, and the production of bar gold 163 ozs. 13 dwts. 4 grs., giving a yield of 1 oz. 3 dwts. 22 1/2 grs. per ton. We hope to put on more mills during the present month, but this will depend upon whether a lasting thaw comes to give water.

**Val Topa District: Intermediate under Zero:** The end south, on Marmoso lode, produces 10 tons of ore per fathom, yields 8 dwts. of gold per ton, and the quartz is spreading, and of fair quality, but the ground is hard. The same end, on west lode, is in dry massive schist only.—No. 1 Level: The end south, on west lode, produces 5 tons per fathom, yields 7 dwts. per ton, and shows diverging branches, one of which will have to be left now. No. 2 Level: The end south of great quartz lode has easier ground, but continues sterile. In the end south, on the flat lode, the branch of quartz widens a little, but does not become of value.—Intermediate under No. 2: The end south, on new lode, produces 3 tons of ore per fathom, and yields 9 dwts. of gold per ton; ore is coming in again, and promises to increase.—No. 3 Level: The end north, on west lode, appears more kindly than for some time past. The end south, on west lode, produces 2 tons per fathom, yields 9 dwts. per ton, and has a small branch of quartz with crystals. The end north, on great quartz lode, is in sterile schist, with good walls. The cross-cut east has massive micaceous rock.—No. 5 Level: The end south, on west lode, continues in sterile schist, and cross-cutting to find the other lodes will have to be adopted soon.

The ore mined last month was rather low in quality, but there being more milled the production shows something larger than for January, the figures being as follows:—Ore milled, 470 885 metric tons; bar gold produced, 171 ozs. 7 dwts. 6 grs.; yield 6 dwts. 20 1/2 grs. per ton. The stamps have been started again this week, and if the weather allows of their being continued an improved production may be expected this month.

[For remainder of Foreign Mines see to-day's Journal.]

## AUSTRALIAN MINES.

**PORR PHILLIP AND COLONIAL (Gold).**—Clunes, Jan. 20: Four weeks ending Dec. 31, 1879: Total quantity of quartz crushed on both the companies' and tributaries' account, 3527 tons; total gold obtained, 1085 ozs. 3 dwts. 12 grs. Receipts (including 1187. 12s., obtained from tributaries), 2257. 7s. 2d.; payments (including 3211. paid for firewood), 1988. 8s.; profit, 2687. 19s. 2d., which, added to the previous balance, made a total of 15117. 9s. 4d., which was carried forward to the next month's account.

**TELEGRAPH, Melbourne, March 5: Month ending Feb. 25—Remittance, 4001.** **VICTORIA (London).**—Jan. 9: South Clunes Mine: Total quantity of quartz crushed, 3156 tons for the month ending Jan. 10; total gold obtained, 940 ozs. 7 dwts.; profit, 6387. 12s. 6d.; remittance, 2257.

**ENGLISH-AUSTRALIAN (Gold).**—Mr. Mark Pollard (Fryerstown, January 21) writes:—420 ft. level: We have extended this level 21 ft. during the month; distance from shaft 630 ft. Quartz much the same, but showing a little gold. In consequence of the holidays and putting in new skids for the safety cage (the old ones not being large enough) this end has been delayed a fortnight. I find by careful inspection and inspection of the plan that we have 30 ft. further to drive than anticipated, the distance from boundary being about 60 feet.—320 ft. level: We have crushed 222 tons of stone; result, 58 oz. 3 dwts. retorted gold; a decided improvement on last month. In consequence of the holidays and putting in the safety cage we have only been crushing a fortnight. I expect a return in proportion next month. Western cross-cut extended 12 ft. in quartz 10 ft. thick; quartz improving, machinery in good order, and the safety cage is working well.

**SCOTTISH-AUSTRALIAN.**—The directors have advices from Sydney, dated Jan. 20. The sale of coal from the Lambton Colliery for the month of December amounted to 21,251 tons, and for the six months ending with the 31st of that month 101,778 tons.

**YORKE PENINSULA.**—Capt. Anthony (Jan. 19) writes that he has closed a contract to sink Hall's shaft on the Kurilla lode, from the 55 to the 67. During the past year about 60 fathoms have been driven east of Hall's shaft, in the 55, the last 25 fms. through a lode averaging 4 tons of 20 per cent. ore per fathom. It is his present intention to intersect Morphet's lode, drive under the engine-shaft, and then try the sinking of a mere winze from the 43 to the 55, level down, remove the pumps, and then enlarge the shaft for winding through. If he succeeds in his object there will no doubt remain that they will be able to repeat it at deeper points, and the advantage will be very great. In the engine, with its recent repairs and the greatly improved pump-work, they will have no difficulty in draining both lodes to the 80, unless, indeed, they have an unexpected influx of water. Morphet's engine, with may be an additional boiler, is likely to do all the winding to that depth. The 200 tons of ore mentioned in the last return as being prepared for sale in the colony has been sold, leaving on hand 130 tons of 17 per cent. ore, together with a large quantity of low-class ores.

**WEST BASSET.**—Referring to the prospects of this mine a correspondent writes that an important improvement has taken place in the 140 cross-cut, north of Thomas's. After going nearly six furlongs through the lode they have cut 3 ft. into a leader without any wall being yet found. This is producing rich tin, from 1 to 2 cwt. per ton, and it is certainly the most important discovery that has taken place since the flat-lode was first intersected. It is, in fact, the only point in which the flat-lode has been intersected in this part of the sett. It stands alone for 300 fathoms long, and they will have to sink upwards of 200 fathoms before it will be unbottomed. This discovery no doubt explains the reason of the firmness of the shares in the market.

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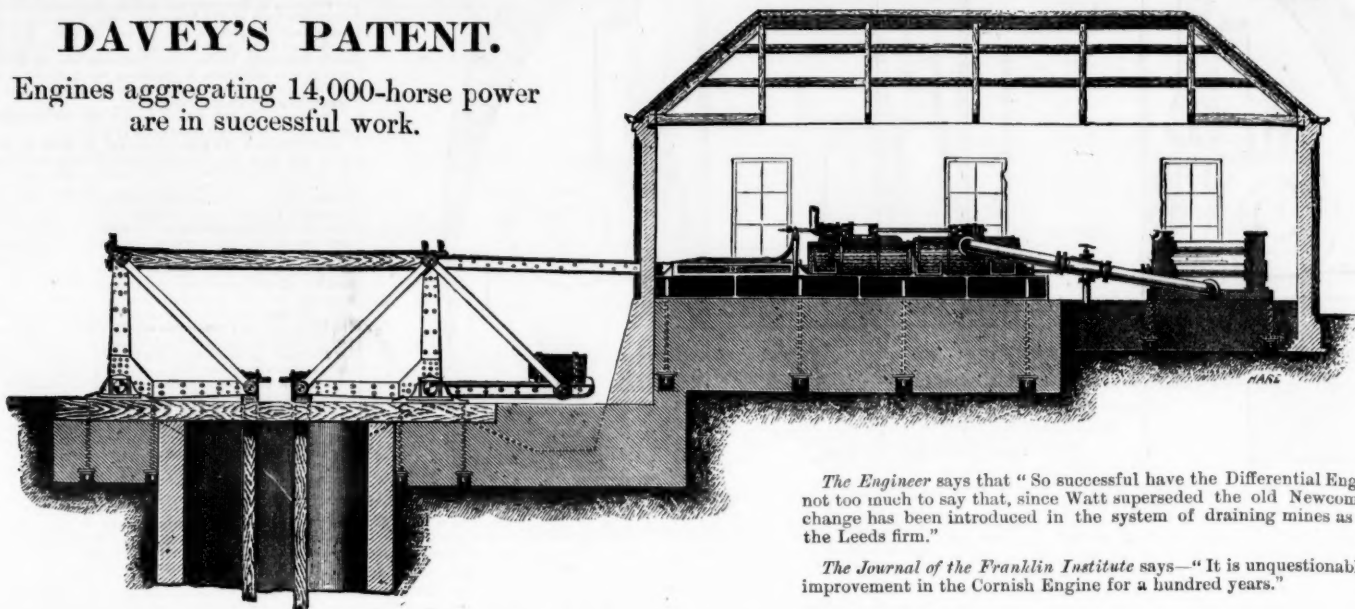
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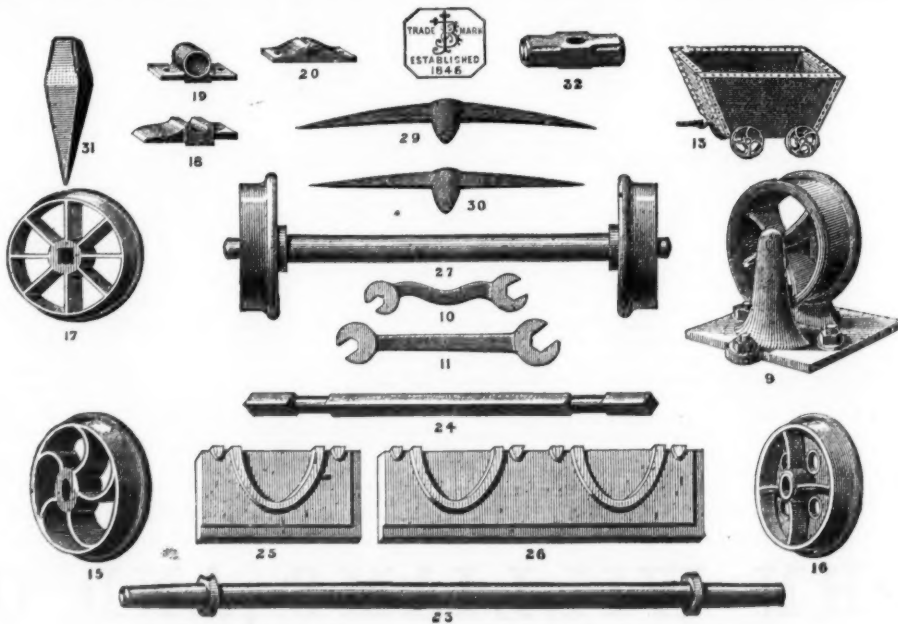
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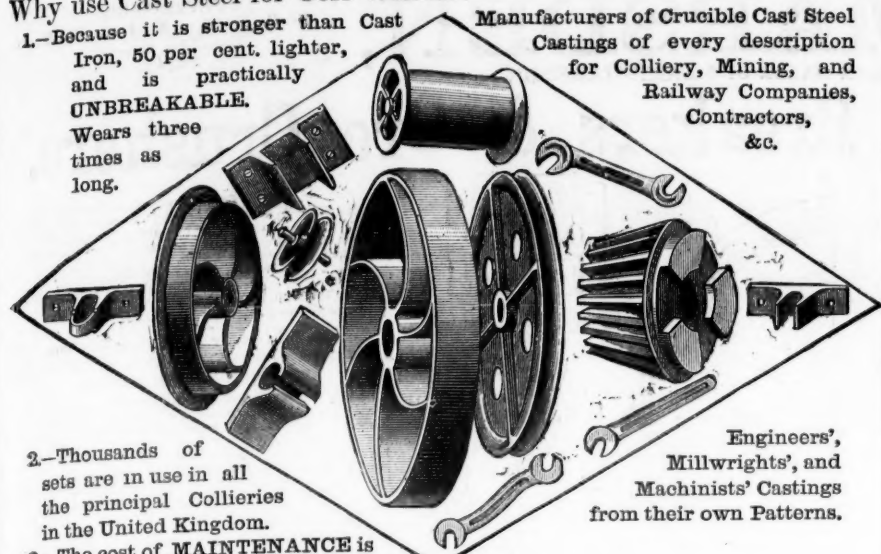
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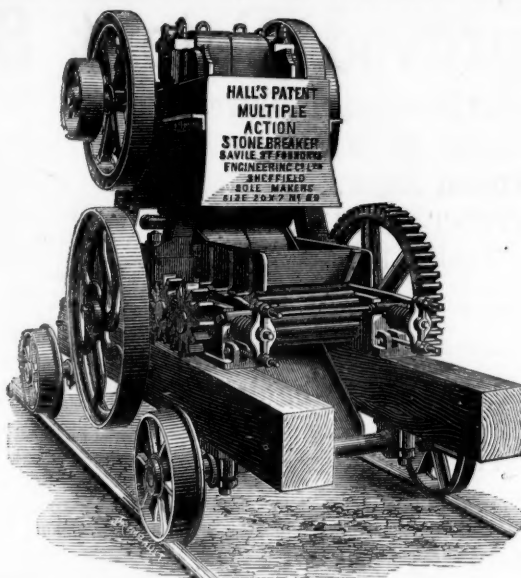
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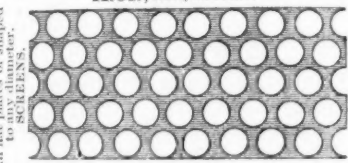
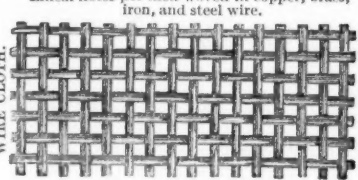
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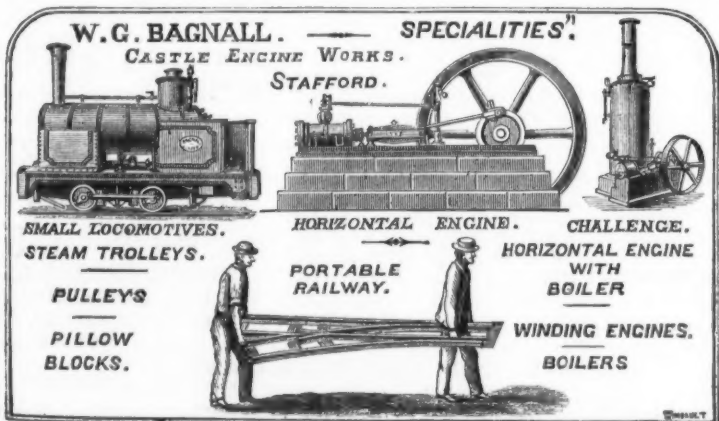
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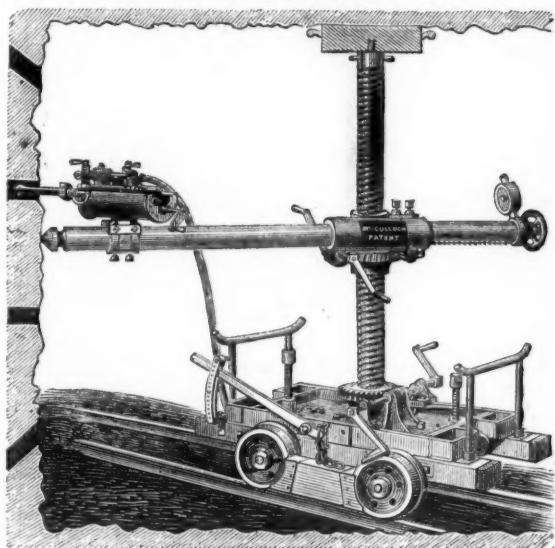
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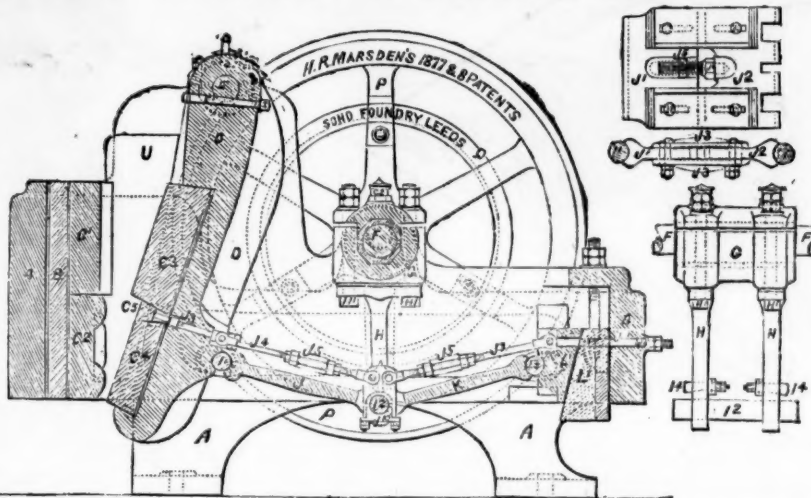
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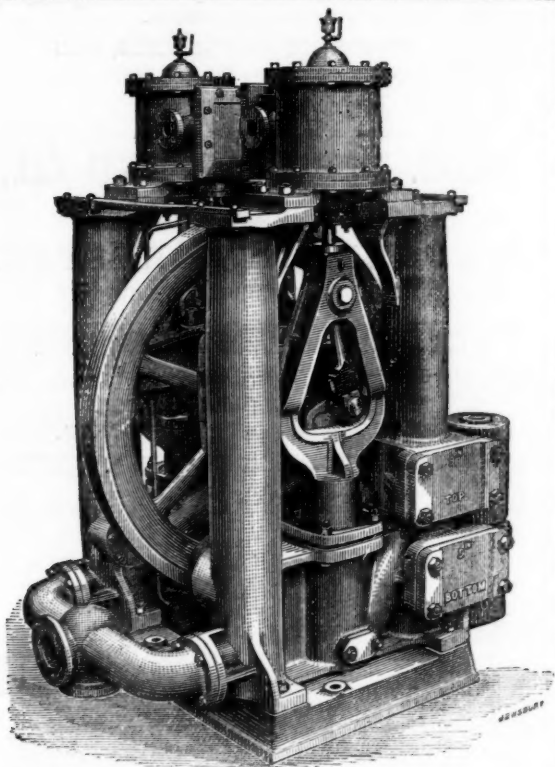
BLAKE'S STONE BREAKER.—Statement made by the Managing Director of the St. John del Rey Mining Company, Mr. John Hockin, with regard to six months' practical working of Blake's Stone Breaker, affording facility for judging of the relative economy of machine and hand labour in this kind of work, and also of the cost of getting the Stone Breaker to work in difficult places. The price paid to Mr. Marsden for the machine referred to by Mr. Hockin was £150, and adding to this the cost of engine, carriage, and fixing, the aggregate cost to the company of the Breaker in working order was £500. By this outlay the company is enabled to dispense with the labour of 50 people, the value of which is £600 per annum. The cost of working the machine could not be more than the wages of about five men (the machine requires but one man to feed it, so that the rest would be for engineer, fuel, oil, &c.), and allowing for interest on outlay and for renewal when necessary, the saving must be enormous.—Mining Journal.

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### CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES, FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.

STOURBRIDGE FIRE BRICKS AND CLAY.